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I. MINIS HAYS, A.M., M.D.

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VOL. LXXXV.



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## TO READERS AND CORRESPONDENTS.

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The following works have been received for review:—

The Chamberlens and the Midwifery Forceps. By J. H. AVELING, M.D., F.S.A. London: J. & A. Churchill, 1882.

Supplementary Catalogue of the Pathological Museum of St. George's Hospital. By ISAMBERD OWEN, M.D. London: J. & A. Churchill, 1882.

Regional Surgery and Surgical Diagnosis. Part I., Head and Neck. By F. A. SOUTHAM, F.R.C.S. London: J. & A. Churchill, 1882.

Some Practical Observations on Vaccination. By W. H. W. WILKINSON, L.R.C.P. London: J. & A. Churchill, 1882.

The Surgical Treatment of Hæmorrhoids. By WALTER WHITEHEAD. London: 1882.

Reduplication of the Cardiac Sounds. By JAMES BARR, M.D., L.R.C.S. Liverpool: 1882.

Die Verwendung des Lapisstiftes zur untersuchung der Epithelien. Von Dr. ERIC E. SATTLER. Aus Cincinnati.

Leçons Cliniques sur L'Epilepsie. Par M. V. MAGNAN. Paris, 1882.

Elementos de Filosofia Quimica. Per VICENTE MARCANO. Caracas, 1881.

La Mère et L'Enfant dans les Races Humaines. Par le Dr. A. COIVE. Paris: Octave Doin, 1882.

The Principles and Practice of Surgery. By JOHN ASHURST, Jr., M.D., Prof. of Clinical Surgery in the University of Pennsylvania. Third edition, revised and enlarged. Philadelphia: Henry C. Lea's Son & Co., 1882.

Medical Electricity. By ROBERTS BARTHOLOW, A.M., M.D., LL.D., Prof. of Materia Medica in Jefferson Medical College. Second edition. Philadelphia: Henry C. Lea's Son & Co., 1882.

A System of Surgery. By S. D. GROSS, M.D., LL.D., D.C.L. Oxon, LL.D. Cantab. Sixth edition, revised and improved, in 2 vols. Philadelphia: Henry C. Lea's Son & Co., 1882.

Legal Medicine. By CHARLES MEYMOTT TIDY, M.B., F.C.S., Prof. of Chemistry and of Forensic Medicine at the London Hospital. Vol. I. Philadelphia: Henry C. Lea's Son & Co., 1882.

A Treatise on Fractures. By LEWIS A. STIMSON, B.A., M.D., Prof. of Surgical Pathology in the University of the City of New York. Philadelphia: Henry C. Lea's Son & Co., 1882.

Diseases of the Rectum. By WILLIAM ALLINGHAM, M.D. Fourth edition. Philadelphia: P. Blakiston, Son & Co., 1882.

Sore Throat. By PROSSER JAMES, M.D. Fourth edition. Philadelphia: P. Blakiston, Son & Co., 1882.

Slight Ailments; their Nature and Treatment. By LIONEL S. BEALE, M.D., F.R.S., Prof. of Practice of Medicine in King's College, London. Philadelphia: P. Blakiston, Son & Co., 1882.

Quiz Compend; Anatomy. By Dr. S. O. L. POTTER, M.D. Philadelphia: P. Blakiston, Son & Co., 1882.



Diseases of the Uterus, Ovaries, and Fallopian Tubes. By A. COURT, Prof. of Clinical Surgery, Montpellier, France; translated by AGNES McLAREN, M.D., M.K.Q.C.P.I., with a preface by J. MATTHEWS DUNCAN, M.D., LL.D., F.R.S.E. Philadelphia: P. Blakiston, Son & Co., 1882.

Diseases of the Liver. By GEORGE HARLEY, M.D., F.R.S. Philadelphia: P. Blakiston, Son & Co., 1882.

Practical Laboratory Course in Medical Chemistry. By JOHN C. DRAPER, M.D., LL.D., Prof. of Chemistry in the Medical Department of the University of New York. New York: Wm. Wood & Co., 1882.

Asthma, its Pathology and Treatment. By HENRY HYDE SALTER, M.D., F.R.S. New York: Wm. Wood & Co., 1882.

Studies in Pathological Anatomy. By FRANCIS DELAFIELD, M.D., Adjunct Professor of Pathology in Bellevue Hospital. Vol. I. New York: Wm. Wood & Co., 1882.

Rheumatism, Gout, and Some Allied Disorders. By MORRIS LONGSTRETH, M.D., Attending Physician to the Pennsylvania Hospital. New York: Wm. Wood & Co., 1882.

Practice of Medicine. By ROBERTS BARTHOLOW, M.D., Prof. of Materia Medica and Therapeutics in Jefferson Medical College. Third edition. New York: D. Appleton & Co., 1882.

Index-Catalogue of the Library of the Surgeon-General's Office, U. S. Army. Vol. III.

Nitro-Glycerin as a Remedy in Angina Pectoris. By WM. MURRELL, M.D., M.R.C.P. Detroit: G. S. Davis, 1882.

Microscopical Morphology of the Animal Body in Health and Disease. By C. HEITZMANN, M.D., Late Lecturer on Morbid Anatomy at the University of Vienna. New York: J. H. Vail & Co., 1882.

Labour Among Primitive Peoples. By GEO. J. ENGELMANN, M.D., Prof. of Obstetrics in the Post Graduate School of the Missouri Medical College. St. Louis: J. H. Chambers & Co., 1882.

Medical Index. By J. A. MINEN, Ann Arbor, Michigan, 1882.

The Spinal Nerves. By A. H. P. LEEF, M.D. Brooklyn: F. B. O'Connor, Jr., 1882.

Essentials of Vaccination. By W. A. HARDWAY, M.D. Chicago: Jansen, McClurg & Co., 1882.

Extirpation of the Kidney. By PAOLO DEVECCHI, M.D. San Francisco, 1882.

Analysis of Eight Thousand Cases of Skin Diseases. By L. DUNCAN BULKLEY, M.D. New York, 1882.

Therapeutics, Materia Medica, and Toxicology. By H. C. WOOD, M.D., Prof. of Materia Medica and Therapeutics in the University of Pennsylvania. Fourth edition, revised and enlarged. Philadelphia: J. B. Lippincott & Co., 1882.

Thomas's Operation, "Laparo-Elytrotomy." By F. E. BECKWITH, M.D. New Haven, 1882.

The Prescription of Proprietary Medicines. By C. A. LINDSLEY, M.D. New Haven, 1882.

The Application of Pressure in Diseases of the Uterus, Ovaries, and Peri-Uterine Structures. By V. H. TALLAPHERO, M.D. Atlanta, Ga., 1882.

Bacteria as Beneficial and Noxious Agents. By C. S. DOOLEY, M.D. Rochester, New York.

Abortive Treatment of Mammary Abscesses by Compression. By G. H. NOOLE, M.D. Atlanta, Ga., 1882.

Calcium Sulphide in Inflammatory and Suppurative Aural Diseases. By SAMUEL SEXTON, M.D. 1882.

The Etiology of Consumption. By D. N. KINSMAN, M.D. Columbus, O., 1882.

Tubercular Tumours of the Windpipe and Tuberculosis of the Laryngeal Muscles. By J. N. MACKENZIE, M.D. Baltimore, 1882.

Alcoholic Anæsthesia. By LEWIS D. MANSON, M.D. Hartford, 1882.

Subjective Traumatism of the Eye. By W. S. LITTLE, M.D. Philadelphia, 1882.

Reflections on Criminal Lunacy, with Remarks on the Case of Guiteau. By C. H. MILLS, M.D. Philadelphia, 1882.

Is Tubercular Consumption a Contagious and Parasitic Disease? By BELLA COGSWELL, M.D. Flint, Mich., 1882.

Non-Uniformity in the Treatment of Pott's Disease. By M. JOSIAH ROBERTS, M.D. New York, 1882.

Contributions to Surgical Gynecology. By E. W. JENKS, M.D. Chicago, 1882.

The Practice of Gynecology in Ancient Times. By E. W. JENKS, M.D. Chicago, 1882.

On the Use of the Curette. By B. BERNARD BROWNE, M.D. Baltimore, 1882.

The Use of the Écraseur in Curing Deep-seated Fistula in Ano. By J. M. F. GASTON, M.D. Campinas, Brazil, 1882.

Prescribing Alcoholics. By JOHN BLACKMER, M.D. New York, 1882.

- Restraint and Seclusion in American Institutions for the Insane. By H. M. BANISTER and H. N. MOYER. New York, 1882.
- Some Points in the Administration of Anæsthetics. By G. H. RONÉ, M.D. Baltimore, 1882.
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- Lesions of the Orbital Wall due to Syphilis. By CHAS. STEDMAN BULL, A.M., M.D.
- Contributions to Surgical Gynæcology. By E. W. JENKS, M.D. Chicago, 1882.
- Compound Dermoid Cyst of the Orbit. By H. C. CORNWELL, M.D. Columbus, O., 1882.
- Preventive Medicine. By W. P. BEALL, M.D. Raleigh, 1882.
- The Nature of Yellow Fever. By S. M. BEMISS, M.D. New Orleans, 1882.
- Transactions of the South Carolina Medical Association for 1882. Charleston, S. C., 1882.
- Transactions of the American Otological Society. Vol. III. Pt. 1. Boston, 1882.
- Proceedings of the Medical Society of the County of Kings. Oct., Nov., 1882.
- Transactions of the Mississippi State Medical Association. April, 1882.
- Proceedings of the Allahabad Medical Society. Sept. 1882.
- Transactions of the Medico-Chirurgical Society of Edinburgh. Vol. I. 1881-82.
- The Royal London Ophthalmic Hospital Reports. Aug. 1882.
- Report of the State Board of Health of Wisconsin for 1881.
- Report of the Health Department of the City and County of San Francisco for 1882.
- Report of the Pennsylvania Hospital for the Insane. Philadelphia, 1882.
- Report of the Surgeon-General of the United States Army. 1882.
- Report of the Surgeon-General of the Marine Hospital Service. 1882.
- Preliminary Report on the Yellow Fever Epidemic of 1882 in the State of Texas.

The following Journals have been received in exchange:—

- Brain, Oct. 1882.
- British Medical Journal, Oct. to Dec. 1882.
- Dublin Journal of Medical Sciences, Sept. 1882.
- Edinburgh Medical Journal, Oct., Nov., Dec. 1882.
- Glasgow Medical Journal, Oct., Nov., Dec. 1882.
- Journal of Physiology, Vol. III., Nos. 5 and 6.
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- Medical Times and Gazette, Oct. to Dec. 1882.
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- Practitioner, Oct., Nov., Dec. 1882.
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- Alienist and Neurologist, July to Oct. 1882.
- American Journal of Insanity, July to Oct. 1882.
- American Journal of Obstetrics, July to Dec. 1882.
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- Druggists' Circular, July to Dec. 1882.
- Ephemeris of Materia Medica, Pharmacy, and Therapeutics, July to Nov. 1882.

Fort Wayne Journal of the Medical Sciences, July to Oct. 1882.  
 Gaillard's Medical Journal, June to Sept. 1882.  
 Half-Yearly Compendium of Medical Sciences, July, 1882.  
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 L'Union Médicale du Canada, July to Dec. 1882.

The usual Continental exchanges have been received ; their separate acknowledgment is omitted for want of space.

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The advertisement sheet belongs to the business department of the Journal, and all communications for it must be made to the publishers.

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2. The Principles and Practice of Surgery. By John Ashhurst, Jr., M.D., Professor of Clinical Surgery in the University of Pennsylvania, etc. Third edition, enlarged and thoroughly revised, with five hundred and fifty-five illustrations. 8vo. pp. 1064. Philadelphia: Henry C. Lea's Son & Co., 1882.	197
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2. Transactions of the New Hampshire Medical Society at its 91st Annual Session, held at Concord, N. H., June, 1881. 8vo. pp. 168. Concord, 1881.	
3. Transactions of the Medical Society of the State of Pennsylvania, at its 32d Annual Session, held at Lancaster, May, 1881. Vol. xiii., Part ii. Published by the Society. 8vo. pp. 501-901. Phila, 1881.	
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- XXXIV. Hydrannios—Contribuzione allo studio dell'eziologia dell'hydramnios e della patologia della placenta. A contribution to the study of the etiology of hydrannios and of the pathology of the placenta, by Dr. G. B. Nicolini, First Assistant of the Obstetric Clinic of the Royal University of Pavia, Italy. (Annali Universali di Med. e Chirurg. July, 1882, pp. 20.) . . . . . 230
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*Part 1*

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ARTICLE I.

THE REVIVAL OF SYMPHYSIOTOMY IN ITALY, WITH COMPARATIVE TABLES OF THE EARLY AND LATER CASES, SHOWING THAT THE OPERATION HAS BEEN MORE FREQUENTLY PERFORMED IN THAT COUNTRY IN THE LAST SEVENTEEN YEARS THAN IN ALL EUROPE IN THE PREVIOUS EIGHTY, AND WITH FAR BETTER RESULTS. THE WHOLE SUBJECT EXAMINED HISTORICALLY AND CLINICALLY. By ROBERT P. HARRIS, A.M., M.D., Fellow of the College of Physicians, Phila.; Member of the Obstetrical Society, Phila.; Corresponding Member of the Royal Medico-Chirurgical Academy of Naples, etc.

ONE hundred and fourteen years ago, a French medical student who had but recently entered upon the study of his profession, sent to the Academy of Surgery of Paris, a proposition, in which he advocated a division of the symphysis pubis in labour in cases of deformed pelvis, and claimed that such a section would admit of the enlargement of the pelvic canal, and the delivery of the fœtus. This proposition of Jean René Sigault was ridiculed in the Academy, and treated as the wild scheme of an ignorant youth. Not convinced of his error, Sigault made the plan the subject of a thesis in 1773, and in 1777 made trial of the operation, as shown in table 1, case 1. The fœtus being small, and the pelvis of the rachitic dwarf larger than was admitted, there was no strain upon the sacro-iliac synchondroses, and the child was delivered alive. The woman recovered and was exhibited with her infant, to the annoyance of the Academy of Surgery, and the professional advantage of the operator, who was presented with a medal by the Faculty of Medicine, and with a pension by the government; one of the latter being also given to the woman.

Being very unwisely lauded as a public benefactor on the merits of one case, and it neither a crucial one, nor in all respects a perfect success,

there was at once created a feeling of opposition to the operator and his scheme, in which the Academy of Surgery was by no means idle, and the medical profession became divided into *Cæsarcanists* and *Symphysiotomists*, Sigault having claimed that his operation was to set aside the Cæsarcan section in cases of pelvic deformity. The basis of the scheme was the claim, that the pelvic symphyses became relaxed during pregnancy, and could be acted upon like a hinge to a considerable extent without rupture. This was denied, and to prove it an error, the operation was performed upon a number of dead subjects in which, the condition of the body favouring the production of the result anticipated, the ligaments tore in the experiments. Years afterward, when the excitement had passed away, and the operation was rarely performed, it was found that women dying in labour and operated upon soon afterward, exhibited a marked mobility in the sacro-iliac synchondroses, which would admit of a wide separation of the pubic bones without laceration. Dr. Ainsiaux, of Liège, under these circumstances, in 1811, obtained three inches of separation, but found that after the woman had been dead 36, 38, 48, or 54 hours, he could only obtain from  $1\frac{1}{4}$  to  $1\frac{1}{2}$  inches. Dr. Giraud, of Paris, in 1800, reached the same opinion.

Symphysiotomy, so far as the design and execution of it upon the living woman were concerned, was entirely original with Sigault; but it had been performed post-mortem many years before; first in Warsaw, in 1655, by Jean V. C. Delacourvée, of France, then in practice there, upon a woman of 48, who died after a labour of four days; and second in 1766 by Prof. Jos. Jacques Plenck, of Bude, Hungary, who, finding in a post-mortem Cæsarcan section, that the fetal head was locked in the pelvis, opened the symphysis pubis and liberated it. It does not appear to have entered the thoughts of either of these obstetricians that such a section might be applicable to the living parturient woman.

The second Sigaultian operation, as shown by table 1, was performed upon a pubes previously diseased, and therefore unsuitable for the experiment. The fatal termination of the case encouraged the opposition, and brought no credit to the German professor who operated. An examination of the early operations gave very little encouragement to one inclined to hope in the possibility of the scheme supplanting gastro-hysterotomy in deformed pelvis with a very short conjugate diameter, or even being adapted to cases as low as  $2\frac{1}{2}$  inches; still Sigault felt inclined to test his plan in an extreme case, as shown in No. 12, and the fatal result was such as might have been anticipated. The best that can be said for him is, that he was in error as to his measurements of the pelvis; otherwise we must regard his act as next to murderous. He was evidently very much disappointed in the capabilities of his operation, and declined to divide the symphysis in his closing days, in a case having a  $2\frac{1}{2}$  inch conjugate. In fact, his whole experience amounted to only five cases.

covering a period of one year. He lost one woman, and four children out of five. His associate, Leroy, appeared to have persevered for a longer period, although he had no more operations; he is generally credited with having saved four children; but his correct credit is three. In the year following Sigault's first operation (1778), it will be noticed there were eleven cases, losing six women and ten children. This being quite discouraging, the number in 1779 fell off to four, all in France; and in 1780 to two; these six in succession recovered; still the operation fell in general estimation until the close of the century, when the average became less than one a year. For more than sixty years the operation has been confined exclusively to Italy, and very few operations have been performed outside of the city of Naples. Here it will be noticed there were only twenty-two operations in forty years, 1818-1858, and of these there were fourteen performed by one man, of which nine recovered, with a loss of ten children.

Even in Naples, the mortality of the women and children was such that the operation may be said to have died out in 1858; there were four cases in eighteen years, and then not another until at the end of eight more years the operation was put upon a new trial, by new obstetrical surgeons in the Ospedale dei Incurabili.

With a great deal of care and research, I have been enabled to prepare for the reader and the benefit of future investigators the accompanying historical table of the early symphysiotomies. This in few words will show the character of cases operated upon, and the fatality to women and children. There is no tabular record extant earlier than that of Prof. Alfonso Corradi, of Bologna, in his History "*Dell'Ostetricia in Italia*," which commences with the case of Bruno Amantea in 1807 (No. 35, table 1), and records twenty-four operations in all, which are exclusively Neapolitan. The other forty-six cases are placed in table for the first time, and the chronological order adopted for the whole seventy will greatly facilitate their examination, and comparison with those in table 2, which presents so different a picture that we are inclined at first to doubt the reliability of the statement. This is made, however, by one of eminent position in Naples, as an obstetrician among the wealthy, by which he has made himself independent; a professor in the University of Naples; a hospital surgeon; and a member of the Royal Academy of Medicine and Surgery. Corradi, who is a very critical historian, makes no doubt about the first twenty-six cases in table 2; and my experience with Italian correspondents leads me to place every reliance upon their statements. Besides, what motive could there be in Prof. Morisani to give an inaccurate hospital record as a basis of an elaborate and voluminous pamphlet; of a second brochure sent to the International Medical Congress; and, finally, of a table prepared for me, according to my own plan, from the hospital records and by private research? I make this

defence in advance because there are those who are already inclined to explain away the marvellous improvements in the results of Sigault's operation by doubting their reliability. Prof. Morisani is associated with four of the best known obstetricians and gynecologists in Italy, as a co-editor in an Italian edition of Cazeaux and Tarnier's *Midwifery*; in the last section of which, just completed, he has committed himself to, and staked his reputation upon, a similar report to that of the operations here presented in my second table. We may not be able fully to comprehend the reason for the great change in the results of the operation of Sigault now, over those which followed the same section, and in the same hospital, under Galbiati; but this is no excuse for doubting the record. The same operators are candid in admitting failures in ovariectomy, the Caesarean section, and Porro's operation; then why would they not be equally so in symphysiotomy? The shoe pinches just here. If Prof. Morisani tells the whole truth, then much that has been said about the dangers and impracticabilities of symphysiotomy in obstetrical text-books will have to be recalled.

*General Summary of the 70 Cases in Table 1.*—Operations performed in Italy, 31; France, 25; Holland, 4; Belgium, 4; Germany, 3; Spain, 1; England, 1; locality not given, 1 = 70. Women lost, 26; children born dead, or moribund, 47; children saved, 20; fate not ascertained, 3. *Causes of death in the women*, viz., pelvic injuries, 4; the same resulting in gangrene, 6; pelvic cellulitis, 1; putrid fever, 1; anasarca, 1; exhaustion and previous disease, 1; shock, 1; syncope, 1; and not mentioned, 10 = 26. Women delivered of children before the symphysiotomy, or at a later period, 19. Cases operated upon twice each, 4, viz., 4-17, 23-29, 36-38, 37-40. Cases of misdirected incision, cutting the bone instead of the cartilage, 3. Prolapsus uteri is mentioned as having followed the operation in 3 cases; and incontinence of urine from fistula in 1 of these and 3 others. Maternal mortality up to 1858, 37 per cent.; foetal mortality, 67 per cent. Contrast this percentage with that shown in table 2. One-half of the 70 operations were performed by six operators, viz., Prof. Galbiati, 15; Dr. Sigault, 5; Dr. Leroy, 5; Dr. De Cambon, 4; Dr. Gianni, 3; and Dr. Jacolucci, 3 = 35. Of this number, 22 women were saved, and 13 lost; and 24 children perished.

The foetal mortality in the early days of symphysiotomy had much to do with diminishing the frequency of its performance. As the operation was largely advocated in the interest of the foetus, the failure to save it reacted upon the measure as a plan for saving the mother. The question really at issue was between the destruction of the foetus and its delivery, *per vias naturales*, alive. Many of the women had already been delivered of dead children without craniotomy, and some with it, and the object to be gained by separating the symphysis pubis was the saving of the child alive. When this failed in its accomplishment, the crotchet was resorted to, and the foetus destroyed in the interest of the mother.

1. Table of 70 Symphysiotomies, from the first case under Sigault, down to 1858.

No.	Date.	Authority.	Locality.	Conjugate diameter.	Result to woman.	Result to child.	Remarks.
1	Oct. 1, 1777	Dr. Jean Roué Sigault	Paris	3 in. 6 lines	Recovered	Alive	3 ft 8 in. high; wife of a soldier; 5th pregnancy; other children dead; feet presentation. Biparietal diam. 3 in. 4 l. Incon- tinence of urine produced by use of the knife; was permanent.
2	Feb. 4, 1778	Prof. Slobold	Würzburg	3 in. 9 l.	Died	Lost	Wife of a soldier; had had 7 children, all dead, 6 delivered en- tire, and one by embryotomy; pubes ossified, and was sawn asunder. Fœtus turned for delivery. Woman died of pelvic injuries resulting in gangrene.
3	Feb. 21, 1778	Dr. Despres du Menneur	St. Paul de Loen, France	....	Recovered	Lost	Was delivered twice after ward without section: on July 10th, 1779, and again in 1780.
4	Mar. 28, 1778	Dr. De Cambon	Mons, Belgium	....	Recovered	Lost	Was delivered twice before by the forceps. Dr. De Cambon was present at her first delivery. The fœtus was lost in the sym- physiotomy by prolapse of the cord.
5	Apr. 5, 1778	Dr. A. Roessel de Vanzesmo	Paris	....	Died	Alive	Woman died of gangrene of the genitalia, the result of pelvic injuries.
6	Apr. 5, 1778	Dr. François J. Nagel	Spiro, Bavaria	3 in.	Died	Lost	Patient had had several living children. Fœtus thought alive for a few minutes. Woman died on the 8th day of external and internal gangrene. Child delivered by turning.
7	Apr. 24, 1778	Drs. L'Escaudé and Reitz	Arras, France	2 in. 9 l.	Died	Lost	Woman died in 3 days. Fœtus thought to be alive a few minutes.
8	May 10, 1778	Prof. Guérant	Düsseldorf	2 in. 6 l.	Died	Lost	Footling; one leg pulled off; cranium opened; delivery partly by crochet and finally by the natural forces. Operation and delivery took 9 hours. Woman lived 11 days.
9	1778	Dr. J. R. Sigault	Paris	3 in.	Recovered	Lost	Was delivered naturally of a living child on Oct. 7, 1779. Dr. Sigault was present, and proposed to operate a second time.
10	1778	Dr. J. R. Sigault	Paris	....	Recovered	Lost	She declined, and he left her in the care of a midwife.
11	1778	Dr. J. R. Sigault	Paris	....	Recovered	Lost	Was delivered a year later, by turning; child alive, but soon died.
12	Nov. 13, 1778	Dr. J. R. Sigault	Paris	22 or 23 l.	Died	Lost	Began to walk on the fifteenth day after the operation. Woman 30 inches high; fœtus 20 inches long. Woman died of pelvic injuries in 5 days.
13	Feb. 12, 1779	Dr. Duret	Brest, France	....	Recovered	Lost	Long labour. Woman affected with gangrene, but escaped death; symphysiis closed in two months; uterus and vagina prolapsed; urine constantly escaping.
14	June 30, 1779	Dr. Van Damme	Racquenghen, Fr.	....	Recovered	Alive; soon died	Patient the mother of 3 living children; fœtus lost by use of forceps.
15	July 18, 1779	Dr. Alphonse Le Roy	Paris	2 in. 8 l.	Recovered	Alive	Woman 4 ft. 3 in. high; vertex presentation; fœtus delivered by turning; biparietal diameter 3 in. 8 lines. Partial pro- ducta uteri produced by the operation.
16	July 24, 1779	Dr. Alphonse Le Roy	Paris	2 in. 9 l.	Recovered	Alive	Woman was delivered of 6 dead but entire children before the operation, and 3 subsequent to it; was able to walk on tenth day. Fœtus small; lived 14 months; footling; biparietal diam. 3 in. 8 lines. Prolapsed uteri produced.

Symphysiotomy Table 1, continued.

No.	Date.	Authority.	Locality.	Conjugate diameter.	Result to woman.	Result to child.	Remarks.
17	Jan. 1780	Dr. De Cambon	Mons, Belgium	.....	Recovered	Alive	A second operation performed upon the subject of case 1. Woman 42, a primipara, and in labour 3 days. Operation by a lieentile under the direction of Prof. Francesco Capivoli, who performed through him the first subcutaneous operation, cutting from below upward and from within outward. Woman recovered in 38 days.
18	Aug. 9, 1780	Licent'le Amadio Deland, directed by Prof. F. Capivoli of Univ. of Cadiz	Urcera, Andalusia, Spain	.....	Recovered	Alive	
19	Dec. 5, 1781	Dr. Du Chauffry	Lyons	1 in. 7 l.	Died	Lost	Incision mal-directed; knife cut off the end of right pubic bone. Forceps used, then turning. Woman died in 52 hours, from pelvic injuries.
20	Dec. 24, 1781	Dr. Antonio Lavagnino	Genoa	2 in. 5 l.	Died	Alive; soon died	Fetus, being thought dead, was extracted with erethet, and lived several hours. Woman died in 17 days; external and internal parts gangrenous.
21	Sept. 1, 1782	Mr. John Welleman	Kington, England	2½ in.	Died	Lost	Case of malacosteon; woman reduced from 5 ft. 6 in. to 4 ft. 4 in. labour; pulse 110; fetus putrid; long labour. First and only symphysiotomy in Great Britain.
22	Mar. 1783	Dr. Giovanetti	Borgo d'Orta, Italy	.....	Recovered	Lost	Patient 31; delivered twice before by erethet; in labour 3 days; pubes but slightly separated in the delivery.
23	Oct. 20, 1783	Dr. Johannes C. Damen	The Hague	.....	Recovered	Lost	Was once before delivered of a putrid child. Pubes opened by a razor and a common knife; head escaped as the patient was expiring.
24	Nov. 1784	Dr. V. (name withheld)	Paris	.....	Died	Lost	Third labour; delivered by turning; patient recovered by 17th day.
25	Aug. 7, 1784	Dr. Alphonse Le Roy	Paris	3 in.	Recovered	Alive; soon died	Woman had borne 3 children before; the first died at 15 months; second was a footling, and lost; third delivered by the erethet. Pubic bone was cut through in the pubiotomy, as in case 21; fetus delivered by the foot. Biparetal diameter 3½ inches. Woman died from injuries to her pelvis.
26	Mar. 12, 1785	Dr. Alphonse Le Roy	Paris	Over 3 in.	Recovered	Alive; soon died	Cord prolapsed; lucinet carried through the os pubis as in cases 13 and 27. Biparetal diameter 3 in. 5 lines. Woman died on 8th day; intra-pelvic parts found gangrenous.
27	Apr. 17, 1785	Dr. Demuthills	Paris	2 in. 6 l.	Died	Lost	A second operation performed upon the subject of case 26, after opening the pubes.
28	Apr. 24, 1785	Dr. Alphonse Le Roy	Paris	2 in. 6 l.	Died	Alive	Fifth labour; inferior strait contracted; delivered by forceps.
29	Aug. 11, 1785	Dr. J. C. Damen	The Hague	.....	Recovered	Alive	Patient 3 ft. high; died on 6th day from pelvic injuries.
30	.....	Dr. De Cambon	Mons, Belgium	.....	Recovered	Alive	Woman 29; in labour 80 hours; child lived less than half an hour. Woman walked in 40 days; had a urinary fistula in lower part of clitoris.
31	Jan. 24, 1785	Dr. De Cambon	Mons, Belgium	2 in. 7 l.	Died	Lost	Symphysis failed to unite. Woman still living, and able to walk, twenty years later; was employed as a housekeeper.
32	.....	Dr. Vordier ducloux	La Ferté Bernard, France	.....	Recovered	Alive; soon died	Case of exostosis of the ischium. Woman died of anasarca in 40 days; symphysis united in 30 days.
33	1787	Prof. Domenico Ferrara	Naples	.....	Recovered	Lost	
34	Rep. in 1801	Dr. Johannes Van Munster	Nymwegen, Holland	.....	Died	Lost	
35	1807	Bruno Amateo	Naples	.....	Died	Lost	

1 Casean credits Imbert of Lyons, 1533, with originating this method of operating, done 33 years before.

Symphysiotomy Table 1, concluded.

No.	Date.	Authority.	Locality.	Conjugate diameter.	Result to woman.	Result to child.	Remarks.
36	.....	Prof. Dubois	Paris	.....	Recovered	Lost	Patient had been once before delivered.
37	1808	Dr. Vernandois	Bourg, France	.....	Recovered	Lost	Woman 30; second labour. Craniotomy and turning tried before opening the pubes; then turning and forceps.
38	Oct. 24, 1809	Profs. Dubois and Gardien	Paris	.....	Recovered	Alive	Woman 27; in her third labour.
39	1811	Dr. Paolo Assallini	Milan	.....	Recovered	?	Dr. P. A. is credited with two cases, both saved.
40	1811	Dr. Vernandois	Bourg, France	.....	Recovered	Lost	Woman 33; same subject as in caso 37. Turning and then forceps used after opening the pubes.
41	1815	Prof. Gennaro Galbati	Naples	2 in. 4 l.	Died	Lost	Woman died of putrid fever in 18 days; child lived 48 hours; foot presentation.
42	1817	Dr. Giacomo Gianni	Milan	.....	Recovered	Lost	Patient 18, 3 ft. 5 in. high; deformed by rickets; fetus delivered by the feet.
43	Jan. 18, 1816	Dr. G. Gianni	Milan	2 in. 3 l.	Recovered	Lost	Fetus delivered with forceps. Woman gave birth to a child when alone, in the following year.
44	1815?	Dr. G. Gianni	Batignay, France	.....	Died	?	Child turned for delivery. Patient died of syncope in an hour and a half.
45	?	Dr. G. Gianni	Batignay, France	.....	Recovered	?	Woman had previously borne 2 children. Before incising the symphysis, the arm had been amputated and fetus destroyed.
46	?	Dr. Riollay	Pimpol, France	3 in.	Died	Lost	Woman recovered in 22 days.
47	?	Dr. Brodthlag, Jr.	?	.....	Recovered	Lost	Woman was well in a month; her health was good afterward.
48	?	Dr. Prillewitz	Holland	.....	Recovered	Lost	Woman recovered in 22 days.
49	1818	Prof. G. Galbati	Naples	2 1/4 in.	Recovered	Alive	Woman recovered in 2 months; her pelvis was deformed by <i>mitracoeleon</i> .
50	1820	Prof. G. Galbati	Naples	.....	Recovered	Lost	Patient was well in 40 days.
51	1821	Prof. Mancini	Naples	2 1/4 in.	Recovered	Alive	In each presentation; fetus moribund when delivered; pubes consolidated in 36 days.
52	1825	Profs. Galbati and Mancini	Naples	2 1/4 in.	Recovered	Lost	Spontaneous delivery.
53	1828	Prof. G. Galbati	Naples	2 1/4 in.	Recovered	Alive	Woman died in 5 days of gangrene of the vagina, etc.
54	1829	Dr. L. Pasquale Cattolica	Naples	2 1/4 in.	Died	Lost	Patient recovered in 35 days. A small piece of bone exfoliated from the pubes.
55	1831	Dr. Francesco Petrucci	Naples	2 1/4 in.	Recovered	Alive	Fetus died the first day, from injury by forceps. Woman affected with incontinence of urine.
56	1835	Prof. G. Galbati	Naples	2 1/4 in.	Recovered	Lost	Fetus delivered by the forceps.
57	1835	Prof. G. Galbati	Naples	.....	Recovered	Lost	(Twins.)
58	1835	Prof. G. Galbati	Naples	.....	Recovered	Lost	
59	1835	Prof. G. Galbati	Naples	2 1/4 in.	Died	Alive	
60	1835	Prof. G. Galbati	Naples	2 1/4 in.	Died	Lost	
61	1835	Prof. G. Galbati	Naples	.....	Recovered	Alive	
62	1837	Dr. Rispoli	Naples	.....	Recovered	Alive	
63	1838	Prof. G. Galbati	Naples	.....	Died	Lost	
64	1839	Prof. G. Galbati	Naples	.....	Recovered	Alive	
65	1840	Prof. G. Galbati	Naples	.....	Died	Lost	
66	1840	Prof. G. Galbati	Naples	.....	Died	Lost	
67	1850	Dr. Caeleppoli	Naples	3 in.	Recovered	Alive	Inferior strait contracted; fetus extracted with forceps; woman recovered in 40 days.
68	1853	Prof. Enrico Jacolucci	Naples	2 1/4 in.	Recovered	Lost	No accident; well in a month.
69	1855	Prof. E. Jacolucci	Naples	2 1/4 in.	Recovered	Alive	" " "
70	1858	Prof. E. Jacolucci	Naples	2 1/4 in.	Died	Lost	Woman died in 15 days of puerperal colic; was 8 months pregnant.



My thanks are due in connection with the preparation of this historical table to Prof. Alfonso Corradi, of Bologna, who kindly sent me his voluminous quarto history of obstetrics in Italy, completed in 1875; and to Dr. J. Stockton Hough, formerly of this city, for the privilege of examining his collection of rare symphysiotomy pamphlets. Those who make researches in old obstetrical matters often bless the memory of the late Prof. Charles D. Meigs, who, when in Europe some thirty years ago, made a collection of old works pertaining to his special branch, which are now accessible to the student, in the libraries of the Pennsylvania Hospital and College of Physicians, of Philadelphia.

*Summary of the 50 Recent Neapolitan Cases.*—Women saved, 40; died, 10. Children born alive, 41; dead, 9. Vertex presentations, 45; shoulder, 2; breech, 3. Conjugate diameters,  $2\frac{3}{8}$  inches in 2 cases;  $2\frac{5}{8}$  inches in 15;  $2\frac{3}{4}$  inches in 5;  $2\frac{7}{8}$  inches in 16; and  $3\frac{1}{8}$  inches in 12 = 50. The same in the fatal cases,  $2\frac{5}{8}$  inches in 5 (lost out of 15);  $2\frac{7}{8}$  inches in 4 (lost out of 16); and  $3\frac{1}{8}$  inches in 1 (lost out of 12) = 10. The fœtuses perished in all of the shoulder (2) and breech presentations (3), and in 4 of the 45 vertex presentations. Nine of the 10 women lost were delivered of living children; and 8 of the 9, who bore dead children, recovered. In only one instance did both mother and child perish, and this was a case of breech presentation in one of the largest ( $3\frac{1}{8}$  conj.) pelves. The woman was operated upon on the fourth day of labour. Cases 8-19 and 24-28 were each operated upon twice successfully, making in all six double operations, or six subjects twice operated upon, on record.

The two tabular records contain, as stated, 120 cases. To these may be added a second successful operation by Assalini, and one each for Balentani and Marescotti, all of Lombardi; the last two prior to 1812; one successful, for Ettore Piccinnini, of Asti, 1871; two for Prof. Novi, of Naples, to be hereafter referred to more particularly; and one to Prof. Morisani, of Naples, 1880. These seven additional cases increase the list to 127, with 92 recoveries. Besides these, are operations, one each, said to have been performed in Constantinople, Bannières-en-Artois, France, and Frankfort-on-the-Main, in the last century, or very early in this, results not given; and no doubt others entirely lost to history.

Italy alone has a credit of 87 symphysiotomies, with 65 women saved, against perhaps as many as 50 for the rest of Europe, more than half of which were in France. The first operation performed in Italy has generally been credited to Dr. Antonio Lavagnigno, of Genoa (No. 20 of table 1), in 1781; and the first in the *Ospedale dei Incurabili*, to Prof. Domenico Ferrara (No. 33 of table 1), in 1787; but Prof. Ottavio Morisani, of the same hospital, has just made<sup>1</sup> claim, in a foot-note to a translation of Cazeaux and Tarnier's Midwifery, that Ferrara performed the

<sup>1</sup> October, 1882.



operation in that institution in 1774, which would have been three years earlier than that of Sigault. This statement is based on that of Prof. Cattolica, which was set aside by Prof. Corradi, in his *History of Obstetrics in Italy*. Galeotti published an obstetrical treatise in Naples, in 1787, in which he refers to the operation of Ferrara of that year, as the second in Italy, and that of Lavagnino as the first. This is, in one sense, also an error, as the case of Giovanetti, 1783 (No. 22, table 1), is between the two. Ferrara is said by Novi, of the same hospital, not to have been made a professor until 1777, three years after he is claimed to have operated. Had Galeotti been in error, he would doubtless have been corrected by Ferrara as to the time of his first operation.

According to Penchienati and Brugnone, 1806, there were 34 symphysiotomies in Europe from 1777 to 1785, with 23 mothers and 11 children saved. Bandeloque gave 25 as the number of operations in the first five years. Churchill, in 1841, gave the record of cases as 49, and deaths as 16. It will now be seen by my record that at that time there had been at least 69, with 25 deaths. After the operation was inaugurated in the Hospital for Incurables in Naples, ninety-five years ago, it was occasionally resorted to at longer or shorter intervals, alternating with the Cæsarean section as the cases appeared to require it, until finally there were but 9 symphysiotomies in a period of thirty years (1836-66), saving only 4 women and 3 children. During the eight years prior to 1866, in which the operation was revived, there was not a case. After the resuscitation, there was such a change of success, that the operation advanced in the estimation of the hospital staff, and has, since January, 1866, been performed more than fifty times.

My second table begins with the resuscitation in Naples, and up to the present time, as far as I have been able to ascertain, there have been 53 operations in that city, saving 43 women and 42 children. In the Hospital for Incurables, where nearly all of these women were operated upon, they have had a bitter experience with the Cæsarean section, losing 25 out of 27 women between 1791 and 1875, although all of the children were removed alive. With an abundant rachitic population requiring relief in parturition, is it to be wondered at that the obstetric surgeons of Naples should endeavour to revive and improve the method of Sigault, notwithstanding its general condemnation, and their own very imperfect success? When we read the record of success, in table No. 2, we are inclined to ask, can this be the "unscientific" and "unjustifiable" operation of Sigault, and if so, what has made the great change in the mortality of the women and children, particularly of the latter? And these are not the only improvements claimed, as will be shown by an examination of the causes of death in the two tables, and attention to the following answers to an interrogatory letter, returned by Professor O. Morisani, of the University of Naples.

1. All of the fifty operations (in table 2) were performed upon rachitic subjects, whose pelves were generally flattened antero-posteriorly. In four or five instances the pelves were simply dwarfed in dimensions. There was no case of rostrate pelvis, as *malacosteon* is very rarely met with in Naples.

2. Version was not resorted to except in the transverse positions. The forceps were applied in about one-fourth of the cases.

3. The separation at the pubes amounted to about 2 inches (50 mm.), which was obtained without any effort, and without producing any lesion of the sacro-iliac synchondroses.

4. The immovable dressing secured the firm union of the symphysis pubis in all the cases that recovered.

5. The women had good health after the operation.

6. There were no malformed infants. Nearly all of the children were sent to the Foundling Hospital to be taken care of.

7. *Phlegmasia alba dolens* did not occur in any of the women.

8. There were no pelvic lesions left, as a sequel of the operation.

9. Vesico-vaginal fistula occurred in but one case, and this was easily cured by an operation.

The answer to No. 8, I presume, is an oversight, as table 2 records a death from "*iliac phlegmon*," case 5.

Table No. 2 was prepared for me in Naples after a form sent; but by an error in transcribing, the heading of the column arranged for the operators (*operatori*) was changed to *operata*, and the names of the patients made to take those of the operators whom I designed to credit. These, however, were mainly Professors Morisani and Novi, already mentioned.

The operation in Naples has been performed with great carefulness. The section is made subcutaneously with the probe-pointed and sickle-shaped (*falcetta*) bistoury of Galbiati. An incision is made above the pubes, somewhat after the method of Ferdinando Carbonai (1841), of Florence, and the knife of Galbiati slowly passed behind the symphysis until it reaches the pubic arch, when its cutting edge is brought to bear upon the ligaments, and the parts are divided from below upward. The pelvis is not forced open, neither is the fœtus turned or dragged upon, but where the head presents, the case is left mainly to nature. In about one case out of four the forceps are applied as an assistant. The incised part is treated antiseptically, and by irrigation if in warm weather; and as soon as convenient the ossa pubes are kept in apposition by an immovable apparatus, to secure an early union of the severed parts.

To avoid the much-dreaded Cæsarean operation, Professor Enrico Jacolucci, of Naples, in 1867, proposed to combine the induction of premature labour with symphysiotomy in one class of extremely deformed cases, and with craniotomy and cephalotripsy in another and still more deformed class. Acting upon his suggestions, Professor Novi has performed

one operation of each class, and Professor Morisani one of the former, as follows:—

1. The first operation was performed by Prof. Novi, in the Hospital for Incurables, upon Louisa Attiola, having a conjugate of  $2\frac{1}{8}$  inches (54 mm.). Labour was induced in the seventh month, the fœtus presented in the second position of the right shoulder, was turned and delivered, but lived only an hour. The woman recovered in 50 days.

2. The second operation by him was performed at term, upon Rosa Meglio, on September 8th, 1872. This woman had a conjugate of less than 2 inches (49 mm.), and the fœtus was dead. After opening the symphysis, the head was perforated and then crushed, after which it was delivered with the body of the fœtus; the woman recovered in 42 days. In estimating the propriety of this mode of operating, it must be borne in mind that one of the two successful gastro-hysterotomies in Naples out of 27 was performed by Prof. Novi, in 1865, and that in 1871, his only former case had died of peritonitis in three days. He doubted the propriety of risking the Cæsarean section for the delivery of a dead child.

3. The third operation is one of much interest, and was performed by Prof. O. Morisani, upon Lucia Esposito, a rachitic dwarf, 20 years old, and 3 ft.  $7\frac{3}{4}$  inches high, having a conjugate of  $2\frac{3}{8}$  inches ( $5\frac{1}{2}$  cm.). Of this woman I have in my possession two full-length photographs, and have received from Dr. Rafaele, in pamphlet, the following description: "Head large; lower jaw elongated; teeth lost or decayed; right shoulder-blade and ribs beneath more salient than the corresponding parts on the left side; left lateral inclination of the thorax, with a convexity in the right dorsal portion; compensative scoliosis of the lumbar portion; back very hollow; and right natis much more prominent than the left." This woman entered the *Clinica Ostetricia* on May 15th, 1880, in the seventh month of her pregnancy, and when the extent of her pelvic deformity was ascertained, it was determined to bring on labour in the first week of the eighth month. This was accordingly done on June 9th, and by the 11th labour had sufficiently advanced to permit of the performance of symphysiotomy, which was executed, after the manner already described, by Prof. Morisani assisted by Prof. Novi and others. When the symphysis was divided, the fœtal head which presented by the vertex in the first position began to descend, passed into the cavity of the pelvis, and after some delay at the perineum was extruded from the vulva. The fœtus soon began to breathe regularly; it was  $15\frac{3}{4}$  inches long, and weighed  $4\frac{1}{4}$  pounds; occipito-frontal diameter  $3\frac{1}{2}$  inches; occipito-mental  $4\frac{3}{4}$ ; biparietal 3 inches (7.5 cm.); and bi-temporal  $2\frac{3}{8}$  inches. The child when three days old was sent to the *Casa della Annunziata*, a foundling hospital.

The wound was dressed with a compress, kept moist by a drainage tape leading from a vessel of hæmostatic water, and by the end of a week the pelvis was secured by an immovable apparatus, an opening being left

over the wound. In 34 days union was complete, and in forty days the patient left her bed, being ready soon afterward to be presented at the clinic, having no pain or inconvenience in walking.

Symphysiotomy would appear to present, according to its history, two eras having in each very opposite characters, as shown by their relative mortality in women and children, and the effects on the health of the surviving subjects. Thanks to the opposition of Baudelocque and many obstetrical writers of the close of the last and beginning of the present century, I have been enabled to procure and present the results of the early operations from 1777 to 1815, by which it will be seen that not only was the mode of delivery very fatal to the women, and still more so to the children, but the opening of the pubes was made to produce such injuries to the sacro-iliac connections as to set up an inflammation ending in gangrene and death. It is clearly demonstrated by Baudelocque that the early operators were often incapable of measuring the interior of the pelvis with any accuracy, and that, in many instances, women capable of bearing unmutilated and in some cases living children were subjected to the operation. By comparing the causes of death in tables 1 and 2, it will also be noticed that they are altogether different. In the first we have generally death from pelvic injuries, and in the second from peritonitis, metro-peritonitis, and other forms of inflammation, such as follow cases of labour, not always instrumental or traumatic. Italian hospital obstetricians, in the regions where pelvic deformities are most numerous, have become of necessity skilled in the use of pelvimeters of various forms, and, from constant practice, are enabled to make very reliable measurements in parturient subjects. They have also been forced to adopt every expedient of modern surgery in after-treatment to diminish the mortality in their old maternities, which were formerly little better than pest-houses in the proportion of deaths. The effect of antiseptic measures and greater cleanliness has been shown by the results of the Porro and other capital operations in large lying-in institutions, and in nothing more than the entire change of results in the two maternities of Naples in which the old and new pubic sections have been performed. Perhaps no tabular record of Italian surgery is so much to the point in exhibiting the possible reversion of results from unfavourable to favourable as that prepared upon the first, second, and third hundred ovariectomies, by Dr. Peruzzi, of Lugo, and reviewed in abstract by me in this Journal. From having lost nine of the first operations in succession before one success, they have gradually improved in results until now the mortality is reduced to a moderate percentage, and the end of reduction has evidently not yet been reached. It is not strange, then, that they have been able to improve materially in their results in symphysiotomy in the old Ospedale dei Inenrabili of Naples. where fifty years ago, and more recently, Galbiati, whose knife they now use, was so unsuccessful in

his results, as shown towards the close of table 1. Had this operation been all that William Hunter, Baudeloeque, Churchill, and many others believed it to be, scientifically considered, it would have been beyond the possibilities for Morisani and Novi to have demonstrated its feasibility upon the living subject as they have done. There is certainly more in the theory of pelvic mobility in pregnant women than was demonstrated by Hunter upon the dead subject, the much more extensive test upon the living having shown the fallacy of his. It can easily be shown how little is gained in the sacro-pubic diameter for each inch of pubic separation; but this does not appear to present so great an obstacle in practice as might be supposed. The pelvis gains in its transverse and oblique diameters, and the head, when not hurriedly forced, moulds itself to the space obtained and slowly passes through. At all events, the fact remains that 42 out of 46 fœtuses presenting by the vertex were in some manner delivered alive, in Naples, since January, 1866, under pubic section, with a saving of 80 per cent. of the mothers. Other hospitals, and obstetricians in other countries in private practice, may not be able to accomplish as much, but the fact of the possibility remains. The Porro operation in two hospitals in Vienna and Milan has been managed with such care and skill that 14 out of 19 women have been saved (73 per cent.), and all of the children; but the rest of the world out of 77 cases has only saved 30, or 38 $\frac{7}{8}$  per cent., with 55 children. Two of these seventy-seven operations were performed in Naples in 1881 and 1882, and both women, with one child, were lost. The Porro operation thus far has saved 44 out of 96 women, and 74 children, or 45 $\frac{5}{8}$  per cent. of the mothers, and 77 $\frac{1}{2}$  per cent. of the children. Prof. Morisani, before the International Medical Congress of 1881, was inclined to compare the symphysiotomies of the Neapolitan hospitals with the *general* work under the Porro operation, which we think unfair to the latter. Let him measure their 50 cases with those of Santa Caterina of Milan and the Krankenhaus of Vienna, and he will show a saving of 80 per cent. of women and 82 per cent. of children, against 73 per cent. of women and 100 per cent. of children.

But in one sense the two operations are not to be compared. Symphysiotomy can never, with every advantage of care, skill, and climate, except in a limited degree, be made to take the place of the Cesarean and Porro-Cesarean operations, as its advocates are not inclined to recommend it in cases having a conjugate of less measure than 67 millimeters, or 2 $\frac{5}{8}$  inches. Conscious of this fact, some of the early advocates of symphysiotomy endeavoured to modify the pubic section, so as to make it possible to deliver in cases of extreme deformity, and to this end devised the operation known as *bi-pubiotomy*, which in its fatal results did much to hasten the downfall of the more simple method. The operation originated with Prof. Galbiati of Naples, who performed it on a dwarf 3 $\frac{1}{2}$  feet high, on March 30th, 1832. As this woman had a conjugate of

only an inch, he devised the plan of opening her pelvis, by a subcutaneous section with an Aitkin chain-saw, cutting the horizontal and descending rami of the ossa pubes on either side, so as to be able to open the collapsed superior strait, by lifting the anterior wall of the pelvis from the posterior, as we open a bellows. He succeeded in delivering the woman of a dead fœtus, but such was the injury produced by stretching the tissues over the severed bones, that she died in agony on April 3d, four days later, her vagina, vulva, and surrounding tissues being all gangrenous. Not contented with this disastrous test, Dr. Nanziente Ippolito tried the same plan in the Hospital for Incurables in the winter of 1842-3 with a similar fatality. Thus ended the attempt to make a pelvic section do the work of a gastro-hysterotomy in cases of excessive pelvic deformity.

Symphysiotomy has found a home in Italy for two reasons, viz., the number of parturient women demanding relief on account of pelvic deformity, and the opposition of the Papal church to the destruction of unborn infants. In a country like Great Britain or the United States, cases with the conjugate limits in table No. 2, would be delivered by craniotomy or cephalotripsy, as the life of the fœtus is considered of no value where that of the mother is in danger. But although the general teaching of our text books is to this effect, there are exceptional cases in which there should be an effort made to save the fœtus. If symphysiotomy can be performed with safety to the mother, why should it not be employed in cases where the pelvis is just a little too small to admit of the fœtus being born alive, and where fœtus after fœtus has been sacrificed to save the mother? Such cases could be relieved and saved by the induction of premature labour, but the opportunity to do this at the proper time is generally wanting, and patients are often unwilling to submit to it. I have seen a woman lose child after child, simply because her pelvis was small, and the foetal heads large; and yet occasionally deliver herself where the head was small enough to pass. There have been as many as sixteen children sacrificed in the successive labours of one lady in this city, each head having been locked in her pelvis, which was small but not deformed: a seventeenth was saved, by an accident inducing labour, when she was 8 months pregnant. Now is there not a field for symphysiotomy in such cases, if the operation can be performed with the small amount of risk claimed in table 2? Has the fœtus no claim upon us for its life, and must we always destroy it in the interest of the mother? I believe with the late Dr. Thomas Radford of Manchester, Eng., that the fœtus has more title to life than we generally accord it.

Symphysiotomy is by no means the "very simple" operation that writers have claimed it to be. As deformed pelvises are frequently asymmetrical, it is difficult to define the exact centre of the symphysis pubis, just as it is to determine in an ovariectomy the position of the *linea alba*. If the end of one os pubis is sliced off as has several times been done, the piece



excised will become carious and keep up a discharging fistula until it is expelled or removed. An error in striking the line of the cartilage will also delay very materially the process of union. The operation is best adapted to cases of rachitic deformity, or to symmetrical dwarfing of the pelvis, and should be avoided where there is any reason to believe that the deforming disease may have produced sacro-iliac ankylosis on one or both sides. It would therefore be improper to operate in a case of Nægelé's oblique pelvis, or Robert's pelvis; or of the oblique pelvis produced by coxalgic ankylosis of one side, in which the os innominatum is undeveloped, flattened, and apt to be united by bone to the sacrum.

The result of the operation will often be determined by the relative size of the foetal head; and the impossibility of ascertaining its dimensions before delivery, constitutes another of the difficulties in the way of operating. A dwarf may carry in utero a foetus which is out of all proportion to her own size (see case 12, table 1), and the possibility of this should be suspected, if the father is of large proportions. Rachitic dwarfs are usually illegitimately impregnated, and although they may attempt to conceal this fact, the size of the father of the child can generally be ascertained, at least so far as to his being a small or tall man. A woman of 4 feet 4 inches high, bore in this country a foetus of 14 pounds weight; and one of 3 feet 2 inches high, a child weighing 9 pounds: both were removed by the Cæsarean section. It is evident that in such cases, the operation of Sigault must be a failure. In the lower animals, the impregnation of a small female by a much larger male is not infrequently fatal to her in labour from the excessive size of the foetuses. A few years ago a leopardess died in labour in the garden of the Philadelphia Zoological Society from this cause. She had been brought up in captivity and her skeleton was of small size, while the male was a large trapped animal caught after maturity; three cubs were extruded, and four larger ones remained in utero, where they were found *post mortem*.

Where premature delivery at the earliest viable period is impossible, it may be advisable to bring on labour and then open the symphysis as in the Morisani case already related. The fatality of such cases under craniotomy and the Cæsarean section influenced the Neapolitan obstetricians to offer this method as one less dangerous to the mother, as well as saving the foetus: the gain of a fraction of an inch may decide the question between its life and death.

Version by the feet was the common practice of the early symphysiotomists, and no doubt the cause of serious injury to the mother and the death of the foetus in many cases. The abandonment of this practice has very materially reduced the fatality of the operation to the foetus, and the amount of strain put upon the sacro-iliac synchondroses. Traction and version by the feet are confined, in Naples, to non-cephalic presentations, as of the shoulder, body, breech, and feet.

## ARTICLE II.

THE REGISTRATION OF VITAL STATISTICS.<sup>1</sup> By JOHN S. BILLINGS, M.D.,  
Surgeon U. S. Army.

THE subject of registration of vital statistics is one of the most important, and at the same time most difficult, in sanitary as well as social science. Its difficulties are in part due to its apparent simplicity. Before studying it, and attempting to obtain practical results, almost every one is disposed to think that he understands it, and is quite ready, not only to undertake the duties of registrar or census superintendent, but to prepare a law or ordinance regulating the matter.

After one has investigated the matter a little, and has become somewhat acquainted with the methods in use, it is not unlikely that he will suppose that he has made some remarkable discoveries of causes of error, imperfect returns, insufficient tabulations, and erroneous conclusions, and will thereupon proceed to prepare a paper criticising the work of his predecessors and proposing reform. It is probable, however, as he continues his studies, that he will find that his discoveries are not new, that there are various practical objections to his proposed improvements, and that it is much easier to confine his essay to denunciation of that which is, than to point out clearly and definitely that which ought to be, and which is at the same time practicable.

Vital statistics, in the widest sense of the term, includes the records of all circumstances affecting the production or duration of human life, corresponding almost precisely with the term "*démographie*," as used by Guillard and other modern French writers. It includes records of the population living at a given period, such as are obtained by the census; and also a record of the changes taking place in this population by births, marriages, and deaths, such as is obtained by registration. In almost all countries, the census of the population and the system of registration, although depending upon each other for much of their interest and value, are nevertheless kept separate as a matter of administration, and are obtained by entirely different methods. It is only where there is no system of registration, as in the United States taken as a nation, that an attempt is made to obtain through the machinery of the census the data which should be derived from current records. But while the results thus obtained are certainly better than none at all, they are extremely imperfect, and lead to serious errors on the part of those who attempt to use them without bearing constantly in mind their incompleteness and mistakes.

The registration of vital statistics properly includes the obtaining of

<sup>1</sup> This paper contains the substance of a report made to the National Board of Health in October last. The Report, with an Appendix containing copies of State laws, etc., will probably appear with the annual report of the Board.

records of births, marriages, deaths, and disease. The comparison of these records with each other, and with those of the living population, form vital statistics proper, and the conclusions drawn from such comparisons form the science of demography.

We have no information that the ancients had any system of registration, although the Jews, Athenians, and Romans took censuses, and it is stated that in China, Japan, and Peru, statistical information of this character was collected. In Egypt and in Rome records of births in certain families appear to have been kept, but the first steps towards a general registration were taken through the clergy about the beginning of the sixteenth century. The earliest registers to which I find reference made were those kept at Augsburg and Breslau, which, according to Stüssmlehl, antedated the order of Lord Thomas Cromwell, in 1538, directing the keeping of parish registers in England.

Little attention, however, seems to have been paid to these English parish registers until 1558, when it was ordered that they should be regularly kept in the churches, and for better preservation should be written on parchment.

In France the first legislation on this subject appears to have been the ordinance of Villers-Cotterets, in 1539. In 1579 the ordinance of Blois directed that there should be brought to the courts at the end of each year the registers of baptisms, marriages, and burials of the several parishes, and by the beginning of the seventeenth century such registers seem to have been in general use throughout Western Europe. Bills of mortality for the purpose of preventing the diffusion of the plague were occasionally issued in London during the latter part of the sixteenth century, and a regular series of weekly bills commenced in December, 1603, at the end of the great plague, and were then continued regularly until the present system of the registrar-general was established. These bills were under the superintendence of the Company of Parish Clerks of London, first incorporated in 1233, as the "Fraternity of St. Nicholas." In 1625 this corporation obtained a decree from the Star Chamber allowing a press to be kept for the printing of bills of mortality of the city and liberties of London, for which purpose the Archbishop of Canterbury appoints a printer.<sup>1</sup>

In 1629 these bills were arranged to show the distinction of sex and cause of death, and in 1728 the distinction of age was introduced; but the distinction of sex was only shown for the total number of deaths, and not for each disease, nor for each group of ages.

In 1662 John Graunt, who was subsequently made a Fellow of the Royal Society, published a little work entitled, "Natural and Political Observations Mentioned in the following Index, and made upon Bills of Mortality," of which several editions were subsequently issued. In his

<sup>1</sup> Burrows on Parish Registers, etc., London Medical Repository, 1818, vol. x. p. 277.

epistle dedicatory addressed to John, Lord Roberts, the Lord Privy Seal, he says :—

“I conceive that it doth not ill become a peer of Parliament, or member of his Majesty’s Council, to consider how few starve of the many that beg; that the irreligious proposal of some to multiply people by polygamy, is withal irrational and fruitless; that the troublesome seclusions in the plague time are not a remedy to be purchased at vast inconveniences; that the greatest plagues of the city are equally and quickly repaired from the country; that the wasting of males by wars and colonies do not prejudice the due proportion between them and females, etc.”

This work of Graunt is the first treatise on vital statistics, and a very good beginning it was.

The first bills of mortality in which the ages were inserted appear to have been those of Breslau, which were used by Halley for the construction of his table of mortality.

In France increased importance was given to the registers kept by the clergy by the decree of April 16, 1667, section 20, which directs that copies of such registers should be accepted as legal proof of the facts set forth.

After the revocation of the edict of Nantes, in 1685, it became difficult and sometimes impossible for Protestants to furnish legal evidence of legitimacy, etc., and it was not until 1787 that the Protestant registers were made legal. After the revolution of 1789 registration passed entirely from the hands of the clergy.

The parochial registers of England were exceedingly imperfect. Even the best of them showed as a rule only the baptisms and burials, not the births and deaths. They were not kept by all religious denominations, nor in hospitals or infirmaries having private burial grounds, and infants dying before baptism were not registered at all. In the old bills these were sometimes entered under the name of *Chrisoms*.

The accounts of these registers given by Mr. Bigland,<sup>1</sup> Mr. Lucas,<sup>2</sup> and others<sup>3</sup> point out in great detail the imperfection of this system. The entries were irregularly made and illegibly written. There was no special care or responsibility for the books, so that some were lost or stolen, etc. etc. Imperfect as it was, however, this was the system brought to America by the early settlers of New England.

In September, 1639, the colony of Massachusetts Bay ordered that births and deaths should be reported to the town clerk by parents and householders within one month of the occurrence of the same. Newly-married men were also to give the clerks certificates of their marriage. Similar orders were made by the Plymouth Colony in 1646. (See Appendix, “Massachusetts.”)

<sup>1</sup> Observations on Marriages, Baptisms, etc., as preserved in Parochial Registers, 1764.

<sup>2</sup> An Impartial Inquiry into the Present State of Parochial Registers, etc., 1791.

<sup>3</sup> For further history as to early registration consult Süssmilch, J. P. Die Göttliche Ordnung in den Veränderungen des menschlichen Geschlechts. Editions of 1775 (4th) or 1798. And the article “Mortality,” by Milne, in the Encyclopædia Britannica.

Rhode Island had similar laws prior to 1698, for they are referred to in the Act of May 3d of that year, and probably all the colonies had somewhat similar regulations, but they fell into disuse without being formally repealed.

The present system of registration of births, marriages, and deaths in England dates from the passage of the Act of August 17th, 1836. This Act provided for the creation of the office of registrar general, at a salary of one thousand pounds per annum, and for the appointment of registrars and deputy-registrars throughout the kingdom; the district of each registrar to be a portion of a union or parish set apart for that purpose by the guardians of said union or parish, subject to the approval of the registrar general. The registrars were authorized and required to inform themselves of every birth and death happening within their districts, and to ascertain and register as soon after the event as conveniently could be done, without fee or reward, the particulars required to be registered according to the schedules appended.

This law was followed by the Act, passed in 1837, to explain and amend the previous Acts. This Act placed the establishment of the boundaries of the registration districts entirely within the power of the registrar general, provided for the appointment of deputy superintendent registrars, and, also, that all registrars should be free and exempt from serving on any jury or inquest. The registrar's office was to be provided and furnished at the expense of the Board of Guardians, and for that purpose they were authorized to borrow money and charge it on the future poor-rates; and in case such Board of Guardians neglected or refused to provide such office, then the Commissioners of the Treasury should do so at an expense not exceeding three hundred pounds in each case, and should collect the money from the guardians.

The present system of registration of births and deaths in England is regulated by the Act passed in August, 1874. A copy of so much of the Acts of 1836, 1837, and 1874 as are of special interest in connection with this subject is appended.<sup>1</sup>

A sketch of the early history of registration in the United States is given by Dr. Sutton as an appendix to the second annual report of the registration of births, marriages, and deaths in Kentucky for the year 1853.

From this, and from an examination of the various registration reports which have been published, it is evident that, in the great majority of the States, the actual registration is exceedingly imperfect, and one would be greatly deceived if he were to judge of these systems by the laws which have been enacted. Copies of nearly all of these State laws are given in an appendix, accompanied with brief memoranda as to the results in the

<sup>1</sup> For further details as to the English system consult Glen. The Law relating to Registration (etc.), 2d ed. London, 1875.

several States; but they are given not so much for the purpose of showing what has actually been done, as to indicate what those who have advocated registration have thought ought to be and could be done.

A brief review of the difficulties and objections which are met with in attempting to provide a complete system of State registration may be useful.

There are four principal objects for a systematic registration of births, marriages, and deaths on the part of a community.

The first is for legal purposes, being intended to identify individuals in their relations to their families and to the community, and rests upon substantially the same grounds as that of the recording of titles of property.

The remark of Dr. Snow, made twenty years ago, that it would probably be impossible for a large portion of the middle-aged men and women in the United States to prove that their parents were ever married, and that they have any legitimate right to the name they bear, no doubt still holds good to a great extent.

The second purpose is for the prevention and detection of crime.

The third object, so far at least as births and deaths are concerned, is to furnish data for sanitary purposes, that is, to give warning of the undue increase of disease or death presumed to be due to preventable causes, and also to indicate the localities in which sanitary effort is most desirable and most likely to be of use.

The fourth object is to collect data for scientific purposes as bearing on the laws of human development. It will be seen that the character of the information required differs somewhat for these several objects. For legal purposes the main object is the identification of the individual, the verification of the fact of birth or death, and the ascertaining that the death is due to what are commonly called natural causes. For scientific and sanitary purposes the identification of the individual is of minor importance, as it is required only for the purpose of preventing duplication of the records.

While the importance of all these objects will usually be readily admitted, it will be found, in attempting to frame a State law for the registration of vital statistics, that there will be objections urged, and that there will be many practical difficulties in its enforcement, no matter what its provisions may be. The principal objection urged by legislators to the passage of such a law will be the cost of the system, and a constant effort will be made to induce those presenting the bill to have the figures for compensation placed at the lowest possible point. As I have stated in a previous report, the attempt to secure complete and satisfactory registration through the voluntary contribution of information by heads of families or by physicians, or by requiring insufficiently paid registrars to obtain the information desired, has always been a failure. As legislators reflect in a general way the state of public opinion in the localities whence they come, it is evident that, unless this public opinion has been educated to a certain

extent with regard to the importance and value of registration, there is small probability of the passage of any satisfactory law, and still less probability that it will be properly executed if passed.

The first and greatest difficulty in educating the people upon this subject is to get them to understand the objects of the registration. Those who have never given any attention to the subject are apt to suppose that it is merely a hobby of the doctors who want the information for their own private purposes, and that this information can only be obtained by an unjustifiable amount of meddling with private affairs and by a system of espionage which will cause much trouble and difficulty.

These objections are, however, of small importance in comparison with the absolute indifference as to the whole matter which prevails throughout the community, nor do the objections often turn upon the practical difficulties in enforcing such laws, seeing that the objectors are in most cases profoundly ignorant of these difficulties.

Dr. Sutton remarks that legislators will insist upon amending the most carefully drawn bill so as to secure greater cheapness, and what they suppose to be greater simplicity in the machinery, until it sometimes happens that those who have been most active in preparing and urging a law lose their interest in it, and may even become opponents, because they see that it has been so mutilated as to be inefficient or impossible of execution. In this country it has been proved by repeated experiments that it is impossible, by legislation which involves neither payment nor penalty, to induce parents or householders to report the births and deaths which have occurred under their respective jurisdictions to the registrars, wherever they may be. Even in cases where this has been required of them under penalty, no one will attempt to enforce a law which inflicts penalties not sanctioned by public opinion.

A registration law which is upon the whole theoretically satisfactory, not unfrequently becomes practically useless, owing to the character of the person who is selected to supervise its execution. It has happened that the person selected to collect and compile the data of registration for a State, has been a politician for whom it was desirable to provide an office, and who had no other qualifications for the place.

The object of such persons is to do as little as possible, and to avoid arousing inquiry or opposition by calling attention to defects. If, for the sake of economy, the duty is placed upon some existing officer of the State, as, for example, the librarian, or the secretary of the Senate, or the secretary of State, and no provision of funds is made whereby this officer can employ a really competent man to do the work, the results are certain to be of comparatively little value; for without a properly qualified supervising officer, it will not be possible to avoid omissions and errors on the part of the local registrars.

The most difficult of all the problems of registration in this country is how to obtain a complete record of the births in a given locality, nor can

we say that it has anywhere been completely and satisfactorily solved. In a report on registration made by Dr. E. M. Snow to the fourth National Quarantine Convention held in Boston in 1860, the best methods of obtaining records of births, especially in cities, were discussed. His conclusion was that the requiring parents to furnish the desired information is in this country useless; that the requiring physicians to report births occurring in their practice is equally useless; and that the only method by which returns of births can be obtained in cities with any approach to fulness and correctness, is by requiring the recording officer to obtain the information personally or by his agents; in other words by sending at periodic intervals some one to call at every house and obtain the data for the births which have occurred there since the last visit. It seems very doubtful, however, as to whether this method would obtain all the births in our large cities, and especially among the floating population. Probably a combination of this method with those pursued in France and Great Britain to obtain the same end, would have the best effect.

The French law as regards the registration of births is contained in Articles 55, 56, and 57 of the Civil Code, which are as follows:—

ART. 55. Declaration of births shall be made within three days from the delivery by the civil officers of the place. The infant shall be presented to him.

ART. 56. The birth of the infant shall be declared by the father, or in default of the father, the doctors of medicine, surgeons, midwives or other persons who have assisted at the labour; when the mother shall not be delivered at her own house, by the person at whose house she has been delivered. The registration of births shall be made in the presence of two witnesses.

ART. 57. The registration of births shall state date, hour, and place of birth, sex of the infant, and the names which are given to it. Also the names, occupation, and residence of the father and mother, and those of the witnesses.

An omission to make the declaration exposes the physician to the relatively severe penalty prescribed by Article 346 of the Penal Code, which is as follows:—

ART. 346. Every person who, having assisted at a labour, does not make the declaration prescribed by Art. 56 of this code, shall be punished by imprisonment of from six days to six months in prison, and fined from sixteen to three hundred francs.

The construction of the last clause of Art. 55 appears to have varied in different parts of France and the neighbouring countries, such as Belgium and the Netherlands, which have substantially carried out the same law. In the larger cities it appears to have been required that the new-born infant should be taken to the city hall at all seasons. The wealthier class could have the verification made at the house by the payment of a fee, but the poor were obliged to take their children to the office of registration, whether they were strong or weak, sick or well. To obtain the certificate of birth and baptism at the house the fee was from fifty to sixty francs.

In the country, and in small towns, the mode of execution of the law



varied, but usually the birth of the infant was registered without requiring it to be carried to the office of the registrar.

The evil results of requiring a new-born infant to be taken from its home to the registering office in all seasons have often been pointed out, and a certain proportion of the mortality of new-born infants in the colder seasons has been attributed to this custom.

Of late years, however, it appears to have become more and more customary to consider the declaration of the father, or in his absence, that of the accoucheur or midwife, with that of two witnesses, sufficient without actually seeing the child. The matter appears to be entirely at the discretion of the local official.<sup>1</sup>

The English law does not require the presentation of the infant at the office of registration, nor need the declaration of birth be made under forty-two days. The result of this is a certain imperfection in the registers in the case of those children who die within the first week of life, since many of these do not appear upon the registers either of births or deaths.

The duties imposed upon physicians and midwives by the articles of the French code relative to the registration of births have been the subject of several essays and reports, the more important of which are the report of Demange, Devergie, and G  ry, in the *Bulletin de la Soci  t   de m  decine l  gale de Paris*, vol. i. 1869, p. 385, and by M. H. H  mar, avocat-g  n  ral, in *Bulletin de la Soci  t   de m  decine l  gale de France*, vol. iv. 1875-76, p. 250.

From these it appears that the physician is compelled to make the declaration of birth in all cases where he has a reasonable certainty that the child in question has actually been born of its reputed mother while the latter was under his charge, although he may have been absent at the precise moment of the delivery of the child. As a matter of fact the physician often makes the declaration in cases where the evidence as to the identity of the child is not legally sufficient, as in cases where he is well acquainted with the mother, has known of her pregnancy, of the fact of her delivery, and is assured that the child presented is the identical child delivered.

The most important difficulty in carrying out this law, so far as the physician is concerned, relates to the name of the mother, which the physician has no right to declare when this has been confided to him in the exercise of his profession, and when the person interested has requested him not to reveal it. It has been decided by competent authority, first, that the physician who reports to the registrar an infant at the birth of which he has attended is not compelled to declare the name of the mother

<sup>1</sup> See memoir on the registration of births in France, by Dr. Loir, *Annales d'hygi  ne*, vol. 34, 1845, p. 452. Also, report of M. De Villiers, on the verification of births, *Bulletin de l'Acad  mie de m  decine*, vol. 32, 1866-7, p. 697, and Dr. Matthysens, on the presentation of new-born infants to the registrar, *Annales de la Soci  t   de m  decine d'Anvers*, 1849, vi. p. 401.

when he states that he only knew it under the seal of secrecy. Second, that the obligation to declare the birth imposed by Art. 346 of the penal code is fulfilled when the person present at the labour purely and simply declares the material fact of the birth conformably to Art. 56.

The declarant is not compelled to furnish the information given in Art. 57, and this is especially the case with regard to physicians and midwives upon whom Art. 378 of the penal code imposes secrecy. Art. 378 is as follows:—

“Physicians, surgeons, and other officers of health, also pharmacutists, midwives, and all other persons, depositaries by their condition or profession of secrets confided to them, and who setting aside the case in which the law compels them to become denunciators shall have revealed these secrets, shall be punished by imprisonment of one to six months and fine of one hundred to five hundred francs.”

The registrars admit the right of the physicians to keep secret the name of the mother and to declare an infant from an unknown father or mother, but they have refused to receive the declaration of the physician unless he would state the residence of the mother. It is, however, evident that the statement of the residence is almost equivalent to giving the name.

It has recently been decided in the case of Dr. Lutaud, who read a paper on the subject before the Medico-Legal Society of Paris, that he should be allowed to make declaration of the birth of an infant without declaring either the name of the parents or their residence, further than to state that the residence was within the district of the registrar.

Another question in connection with the registration of births relates to the matter of the registration of the still-born. Some physicians return as still-born all children that survive for only a few hours or for a day or two, and they also report as still-born, children which are born prematurely and lived several days. Upon this point the recommendation of the committee of the American Medical Association in 1859, seems satisfactory, viz., that all returns should be strictly in conformity with fact, that still-born include only those which are dead when born, whether mature or immature, and that the still-born should be placed in a distinct table and the same facts as to sex and time of birth shown as in the general table. The same should be done with regard to cases of plural births.

We cannot, however, hope to obtain any entirely satisfactory system of registration of births until the people at large have become educated to the necessity for it, and are induced to seek such registration of their own accord in order to secure proof of legitimacy, title to property, etc. Under the provisions of the English registration act the physician or midwife has no special duties in connection with the registration of birth, the duty of notifying the registrar falling upon the father or mother or householder, who are required to furnish this information within forty-two days after the birth.

In England, the duty of the registrar is not to sit at home waiting for a presentation of the infant as in France, but to go himself to the locality

and register the birth. The notice given may be either verbal or written, and, while the registrar is obliged to visit the dwelling, he is not necessarily obliged to see the child.

In Russia the registration of births is in the hands of the clergy, the registration being made by the priest who visits the house the day after the birth. The presentation of the child at the church for baptism is only obligatory after forty days, by which time it is presumed that the mother can be present with the child.

In Austria the registration of births is performed by the clergy of those denominations recognized by the government. For other sects the report must be made to civil officers. Births must be reported by the father. In case of his absence, or of illegitimacy, the report is to be made by the midwife or physician. The report must be made within a week. The presentation of the child is not required, the statement of the midwife or accoucheur made under oath being accepted instead. The secret of the mother is preserved when she demands it, usually by the use of a fictitious name. Deaths are reported by the nearest relative or householder, a permit for burial being required in all cases. These permits are issued upon the presentation of a report of the autopsy, which must in all cases be made by the officer appointed for that purpose.

In Sweden registration remains under the charge of the clergy, based upon the original law of 1686. The following particulars are taken from a communication kindly furnished by M. Siedenbladh, the Director of the Bureau of Statistics of Sweden:—

“The duty of reporting births devolves on the parents, and is usually performed when the child is brought to the font. If the baptism is omitted, which is sometimes the case, the birth nevertheless must be reported. In case of illegitimacy the right of concealing her name is granted to the mother, even though the delivery has taken place in a public institution. When the child is born in a private home, and the mother wishes to remain unknown, the midwife generally reports the birth for registration. The reports must be made within six weeks. Still-born are reported. Every living birth is registered as a living child, no matter what the period of gestation. Registration is performed by the clergy, which is, almost without exception, evangelical Lutheran. The function of registering is also exercised by the clergy, or the heads of the few parishes not Lutheran (Catholic, Jewish, and one Baptist).

“*In Case of Deaths.*—Every deceased must be interred in a church-yard, and for obtaining burying place it is necessary for the relations, or, in want of them, for the police office to report to the clergy for burying the deceased; but if there is any suspicion of crime committed, the police has the decision whether the burial must be preceded by a medico-legal inquest or not. In town the clergy requires a certificate from the town physician, or the physician who had the deceased under his care.

“When, in town, the physician's certificate is required, it must contain the cause of death, which is thereupon written in the register of deaths by the clergyman.

“In the country generally only those causes of death are written in the register that may be stated by not medical men as violent deaths (including suicides) and zymotic diseases, *i. e.*, smallpox, scarlet fever, measles, fever, cholera, etc.”

In Italy births are to be reported by the parents, if illegitimate, by the mother, but if she does not wish to be known, the midwife must report

the births as of unknown parents. In the exceptional case of a physician being present at birth instead of a midwife, it is his duty to report the fact. In case of a birth where the mother wishes to preserve secrecy the person reporting the birth is required to give the precise address and add the statement that the mother wishes to remain unknown. The child must be presented at the registrar's office, but the registrar may dispense with this when the birth is otherwise verified to his satisfaction. In case of children dying within five days it is to be reported that the child is dead, and the law does not demand the report as to whether the child was born dead or died soon after birth. All children born after four months pregnancy must be reported according to the law, but custom has fixed the period at six months. The official registrar is the mayor or syndic, but the duty is always delegated to the communal secretary.

A special difficulty in the registration of births is the fact that the child may not be named for several weeks or even months after birth.

It is much easier to secure a complete registration of deaths than of births, since it is comparatively easy to enforce a law that a permit shall be necessary for every interment or removal of a dead body, and the community soon learns to consider any attempt at burial without a permit as a suspicious circumstance indicating a desire to conceal either the death or the cause of death, and justifying a special investigation by the authorities. When it has been decided to require a burial permit in all cases, there is no difficulty in requiring the data necessary for registration as an indispensable preliminary to the issue of such permit.

A complete system of registration of deaths should include some method of verification of the death and of its cause, by a person having the special knowledge necessary for that purpose.

This skilled verification is necessary, first, to insure the fact of a death having taken place. In its absence, in a large city, there is little or no difficulty in having recorded the death of a person who may be either non-existent or alive and well.

Second, it is necessary to insure the fact of real as opposed to apparent death in any case, and thus to prevent premature burial.

Third, it is necessary to establish the fact that a death has taken place from what may be termed natural causes as opposed to criminal causes. This verification of death and of the cause of death may be made either by physicians employed for that particular purpose, and receiving payment from the State, or by the physician under whose charge the deceased person has been previous to death, only those cases which have not been under the treatment of a physician being referred to a public medical officer or the coroner for verification.

The first system is that employed in France, Belgium, and Austria, the second is the one made use of in England and this country. This matter will be discussed farther in speaking of the methods of ascertaining

the cause of death. All registration laws include physicians as an essential part of their machinery. Some do this directly, by requiring that physicians shall keep a list of all deaths occurring in their practice, and shall forward this list at stated times to the registrar. This method has always proved a failure, as has the similar requirement of clergymen that they shall furnish lists of marriages. Where burial permits are required, a physician may be made responsible for a certificate as to those matters only about which his special professional knowledge is necessary, such as the cause of death, duration of sickness, etc., or he may be required to certify also to age, birthplace, parentage, etc. To this last class of requirements there are objections which are worthy of consideration, since although it is true that the great majority of physicians furnish the information required without any attempt to question the propriety of the law, still there are always some who will object, and a few who will positively decline. The matter can perhaps be best illustrated by taking some of the objections which have been actually urged, and for this purpose we may take first the statement of Sir Dominic Corrigan as to his reasons for refusing in certain cases to fill out death certificates required under the Irish Act. In a paper in the *Dublin Quarterly Journal of Medical Sciences*, vol. li. 1871, p. 341, after stating that he has refused to fill out the certificate required under the Irish Act, he proceeds to give his reasons:—

“The words of the Act are that the medical practitioner who shall have been in attendance during the last illness and until the death, etc., is to fill up and sign the certificate. No man can be considered as in attendance until the death, unless he was *present at the death*. The interval of an hour equally with that of a month intervening between his last visit and the death puts him out of the category of being in ‘attendance until death.’ The certificate requires a medical practitioner to certify to three things; the day of the death, cause of the death, and the length of time the disease had continued. In eight years since the passage of the Act only one case has occurred in which he could certify of his own personal knowledge that death did occur on a particular day. He asks how can a medical practitioner in the majority of instances certify as to duration of disease, information with regard to which must in a great majority of cases be got together on hearsay evidence. A man cannot be compelled to certify to what he is not certain of; therefore, no such acts can be enforced under a penalty. In Ireland the penalty is that of misdemeanor, but no official has ever ventured to bring a recusant into court.”

With this may be compared the objections urged by Dr. Buckingham, in the *Boston Medical Journal*, 1868, vol. i. p. 225. He objects to the law, saying the fact that he saw a man during his last sickness, though years before he died, makes him liable to penalty if he refuses to fill a certificate, although no one may have been in attendance when the man died.

“Certificates are often filled out by persons with no medical education, but who call themselves physicians. Physicians certify to the cause of death, age, etc., when they should refuse any certificate in cases where they have no data by which to judge either of the age or sickness, except statements of some friend.

"The law does not provide that the last attendant shall give it, but any physician having attended a person during his last illness. The undertakers desire certificates because they get a fee, and registrars desire certificates because for each entry they get a fee. The physician is required to give a certificate without fee and liable to fine if he does not give it."

On this letter there was a comment by Dr. Derby, same vol., p. 265.

He replies that with regard to age, duration of disease, etc., they are merely embraced in the certificates signed by the physician for the sake of simplicity of form, that they are practically filled up by the relations or friends, and that no physician need hesitate to certify to them any more than as to the date when he himself was born. We must take the evidence of others as conclusive in circumstances of daily occurrence.

Dr. H. M. Lyman, in the *Chicago Medical Journal*, 1878, p. 252, gives voice to the feeling of passive resistance on the part of a certain number which is felt, but not usually expressed, viz., that registration laws may do very well for countries where people have been trained for generations to acquiescence, but that they are at war with the principles of democratic government and individual freedom. "In this country there is only the curiosity of a few scientific men that can be relied upon for their moral support of a registry law, and it is probable that in Chicago not more than twelve in every thousand would be found to care for the registration of their nativity even in a family Bible. The reason why physicians do not execute the law is because they not only have no personal interest in its execution, but because of an invincible, though not always clearly recognized feeling of revolt against the injustice of a law which inflicts a special tax on the physician in the shape of postage, time, and trouble, and affords no compensation for the extra labor and expense. People do not like to make a present to government in any shape or form. It is as unjust for the State to add fifty cents to the doctor's tax simply because he is a doctor as it would be to add fifty dollars. The State should pay for all such service and it need not incur any great expense. It might, as in the case of jury duty or military service by conscription, fix its own rate, but the obligation should be recognized. The payment would, of course, require increased general taxation, but the increase would then be levied on all alike. The health officers are trying to get service from the doctors without paying for it."

In the *Chicago Medical Journal* for 1879, vol. 38, p. 148, Dr. Lyman continues this subject by calling attention to the New Hampshire Statute allowing twenty-five cents to each physician for recording. He says:—

"I am assured that it is perfectly effectual, and that in no part of the world are vital statistics being perfected as in that little old Granite State! In Minnesota, the State values these statistics sufficiently to pay not less than forty cents for registration of each birth and death."

While the views presented by Dr. Lyman are not those of the majority of the medical profession, who in this, as in many other ways, are willing

and ready to give gratuitous service for the public good, they are, nevertheless, important in a legal point of view, and should be borne in mind in attempting to devise any legislation on the subject. Attempts to compel under penalty physicians to report age and birthplace of their patients are worse than useless. I do not think that the offer of any fee which would be considered reasonable by legislators would have much influence in inducing physicians to report births and deaths, and Dr. Lyman is in error in supposing that New Hampshire or Minnesota have obtained any useful results in this way. The true policy is to call upon medical men to supplement the information which should be demanded from the parent or householder.

As regards births it is bad policy to require under penalty reports of such from medical men, and no sufficient reason exists for so doing. With regard to deaths there is much truth in Dr. Snow's remark that the habit of signing death certificates is incidentally of benefit to physicians as it makes them more careful in diagnosis.

With regard to the registration of marriages the present law of Rhode Island upon the subject, as recently amended, seems to be capable of securing complete returns, and to be just and reasonable in its provisions. In very few of the laws regarding registration which require the information from physicians is there any definition or regulation as to who are to be considered as physicians by the registering authorities. As a matter of fact, in most cases, the certificate of any one who chooses to sign himself or herself as a physician is accepted. The result is necessarily to defeat to a certain extent one of the judicial purposes of registration, viz., the detection of cases of unnatural death and the punishment of the person causing them, and also to greatly diminish the value of the return for statistical purposes, so far as the several causes of death are concerned.

All registration acts which are upon a proper basis presuppose also legislation providing for the determining of those who are properly qualified physicians, and for making the names of these known to the registrar. It may be said, therefore, that the registration of vital statistics depends for its efficiency to a very large extent upon some system of registration of physicians and midwives.

The question as to the connection between registration and the work of sanitary authorities, and whether it is desirable that registrars should be distinct from boards of health, is one that has several times been raised. The principal discussion on this matter has occurred in the city of Boston, where the matter of registration is in the hands of a registrar who is not a physician and has no connection with the health authorities. Attempts have been several times made to place the registrar's office under the Board of Health, and petitions for this purpose have been forwarded extensively by physicians in order to avoid the annoyance of being compelled to get two certificates for each death, one of which goes

to the registrar and the other to the Board of Health, the latter being necessary in order to procure a permit for burial. As a rule, there is no doubt that registration will be best managed by sanitary authorities, and, where these exist, they are, in this country, usually intrusted with it, both as a matter of economy and because the information which it furnishes with regard to deaths is essential to their work.

The subject of the registration of disease has of late years received much attention in England, which has been taking the lead of all other countries in sanitary matters, and the second report of the Royal Sanitary Commission, presented in 1871, contains a very good summary of the reasons for urging such registration as a government measure. After commenting on the defects and errors of mortality registration, the commissioners remark :—

“However complete the registration of deaths may be, it cannot give a fair estimate of the grief and poverty occasioned by sickness that is not fatal; it cannot indicate where or how these are to be prevented or remedied; it cannot tell the cost which is worth incurring for their diminution. To these ends the first step must be a registration, so far as may be practicable, of all the cases of the most prevalent and injurious sicknesses among such portions of the population as may suffice for an estimate of the general state of the public health, and especially to keep the central sanitary authority, constantly aware of the state of the public health in every part of the country. In nearly all cases of epidemic and contagious diseases time is lost before the deaths, few in comparison with the cases, begin to attract attention. In many instances, weeks have elapsed before the existence of widely prevalent and preventable disease has become known to any efficient sanitary authority. Thus the best opportunities are lost both of ascertaining the origin of epidemics and of preventing or limiting their spread. The chances of suppressing an outbreak of disease are in direct proportion to the speed with which it becomes known to a sanitary authority.”

Unfortunately it is much easier to prove that records of disease furnished by all practitioners would be valuable, than to devise any practicable plan by which such records can be obtained. It is in fact impossible to obtain such records for all diseases, and it is difficult to obtain them even for a few of the more important and contagious diseases, although this can be and has been done in cities.

It is not proposed here to discuss the question of the compulsory notification of infectious diseases by all physicians, but, to show the prevailing opinion in England on this subject, the following resolutions passed by the British Medical Association in August last are given, viz. :—

“That in view of the unanimous opinions of all competent sanitary authorities that notification is the indispensable basis of action for arresting the spread of infectious diseases, and of the general testimony as to the satisfactory operation of the Acts which have already been passed by the legislature to make such notification compulsory, this meeting declines to withdraw the approval which the association has repeatedly expressed in favour of urging Parliament to make the notification of infectious disease generally compulsory, under such conditions as may appear to be, after due inquiry, best calculated to protect the public health.

“That this meeting earnestly desires compulsory notification of infectious disease; but it wishes to express its opinion that the compulsion to notify should be placed upon the householder as his duty as a citizen, and not upon the doctor.”



Setting aside the question as to compulsory notification by physicians, it is perfectly possible to obtain very interesting and practically useful information from records of the cases of disease occurring among the sick poor who receive medical treatment at the expense of the public, and to do this at comparatively small expense; and it is curious that in none of our large cities, so far as I know, is any attempt made to collect this information day by day for the use of the health department. It is also possible to obtain valuable information for sanitary authorities in a city through the department of public schools. Something has been done in this direction in the city of Oakland, California, Dr. Woolsey's report with regard to which will be found in the *National Board of Health Bulletin*, vol. ii. p. 447, and the results of which are given in the Annual Report of the Health Officer of Oakland for 1880. By this system the principals of the several public schools report monthly the number of pupils absent three or more consecutive days on account of alleged sickness, and copies of these reports are furnished to the health officer by the superintendent of schools. The results obtained are of statistical interest, but come too late in many cases to serve as a warning. A proper form of report to be kept by the teachers would give the age of each pupil, the residence, and the nature of the alleged sickness. The consolidated report should be furnished to the health officer every week, and cases of alleged contagious disease should be reported at once, with the name of the attending physician, if there is any.

These items just mentioned are by no means the only ones which should be recorded with regard to pupils of public schools from a sanitary point of view, for there should be noted with regard to each child upon entering school the condition of the eye and ear, whether vaccinated, whether it has had scarlet fever, measles, whooping-cough, etc., but these points are not required in the weekly warning report.

Reports of sickness in the police force and other municipal employees can also be obtained without much trouble; and where there are large manufacturing establishments, it will usually not be difficult to obtain regular reports of serious accidents and illness among the workmen. In short, a health officer of tact, who maintains pleasant relations with the medical profession, will be able to obtain a large amount of interesting and useful information with regard to the prevalence of disease without resorting to compulsory legislation, which in many cases at present will be found to be rather a hindrance than a help.

Let us now consider briefly the items to be required in a system of registration of births, deaths, and marriages. The following tables indicate what is required in different States and municipalities, and show at a glance those points which all statisticians consider as essential as distinguished from those with regard to which there is more or less difference of opinion:—

Table showing for each State having Registration Laws the date of the Act, and mode of obtaining information with regard to Births.

	Date of Act.	Who to report births.			Time of reporting births.	Fee for reporting births.	Who to record births.	Fee for recording births.
		Physician, midwife.	Parent, householder, etc.	Town, City, and School Officers.				
Alabama	Feb. 28, 1881	x	x	..	Prescribed by County Board of Health	....	County Health Officer	
California	.....	x	..	..	Quarterly	10 cts.	County Recorder	
Connecticut	Feb. 25, 1877	x	..	..	Monthly	10 cts.	Town Registrar	10 cts.
Delaware	Jan. 1878	x	..	..	Semi-annually or annually	15 cts.	County Recorder of Deeds	10 cts.
	1862	x	..	..	Quarterly	5 cts.	.....	5 cts.
Georgia	Apr. 7, 1881	..	..	..	.....	....	County Ordinary	
	Session Jan. and Feb. 1875	x	..	..	.....	....	.....	5 cts.
Illinois	Jan. 1876	..	..	..	.....	....	.....	
Indiana	May 25, 1877	x	x	..	Within 30 days	....	County Clerk	
	Mar. 7, 1881	x	x	..	Within 15 days	....	Secretary of Town Board of Health	
Kentucky	1851	x	..	x	Annually	2 cts. <sup>1</sup>	Auditor of Public Accounts	
	1878	..	..	..	.....	....	Secretary of State Board of Health	
Maine	Feb. 28, 1821	..	x	..	Within 6 mos.	....	Town Clerk	
	1865	..	..	x	.....	....	.....	
Maryland	1866	..	x	..	Within 6 mos.	....	Clerk of County Circuit Court <sup>2</sup>	15 cts.
Massachusetts	Sept. 4, 1639 <sup>3</sup>	..	x	..	Within 1 month	....	Town Clerk or Registrar	1 d.
(Col. Mass. Bay)	Mar. 7, 1644 <sup>3</sup>	..	..	..	.....	....	Clerks of the Writs	3 d.
(Plymouth Col.)	Oct. 20, 1646 <sup>3</sup>	..	..	..	.....	....	Town Clerk or Registrar	
(Prov. Mass. Bay)	1692-93 <sup>3</sup>	..	..	..	Within 30 days	....	Town Clerk	
	1742 <sup>3</sup>	..	..	..	.....	....	.....	4 d.
	1750 <sup>3</sup>	..	..	..	.....	....	.....	2 d.
	1796	..	x	..	Within 6 mos.	....	Clerks of Towns and Districts	
	Mar. 16, 1844	..	..	x	Annually	5 cts.	do. do.	8 cts.
	May 2, 1849	..	..	..	.....	20 cts.	Clerks and Registrars of Towns and Dis'ts <sup>4</sup>	
Michigan	1880	x	..	..	Monthly	....	.....	
	1869	..	..	x <sup>5</sup>	Annually	10 cts.	Clerk of County or Township	50 cts.
Minnesota	Mar. 4, 1870	..	x	..	.....	....	Town and City Clerks	25 cts.
New Hampshire	June 25, 1858	..	..	x	Annually	....	do. do.	
	July 29, 1881	..	..	..	.....	....	.....	25 cts. <sup>6</sup>
New Jersey	Mar. 3, 1848	..	..	x	Annually	5 cts.	Clerks of Townships	
	Mar. 19, 1851	x	x	..	Within 1 month	10 cts.	.....	
	Mar. 11, 1862	..	..	x	Annually	5 cts.	.....	5 cts.
	Mar. 9, 1877	..	..	..	.....	....	Clerks of County Boards of Health	
	1879	x	x	..	Within 30 days	....	Assessors of Townships, Clerks of Cities	10 cts.
New York	Apr. 28, 1847 <sup>7</sup>	..	..	x	Annually	Fixed by Co. B'd of Supervisors	Town Clerk or Alderman of school district	Fixed by Co. B'd of Supervisors
	May 29, 1880	x	..	..	Within 30 days	....	Town Clerk	
North Carolina	1881	..	..	x	Annually	....	Secretary of State	
Ohio	1880	x <sup>8</sup>	..	x	Annually	....	Probate Judge of Co.	

<sup>1</sup> To assessors only.<sup>2</sup> General courts, hold nt dates given.<sup>2</sup> Clerk of the Court of Common Pleas of Baltimore.<sup>3</sup> Registrars may be elected in towns having 10,000 population and upwards.<sup>4</sup> Persons appointed by City Council of Detroit.<sup>5</sup> For obtaining and recording, 50 cts. to Town and City Clerks.<sup>6</sup> Makes special legislation for New York City.<sup>7</sup> In counties containing towns of 150,000 population and upwards, who must report quarterly.

	Date of Act.	Who to report births.			Time of reporting births.	Fee for reporting births.	Who to record births.	Fee for recording births.
		Physician, midwife.	Parent, householder, etc.	Town, City, and School Officers.				
Pennsylvania	Apr. 14, 1851	x	..	..	Within 30 days	....	County Register of Wills	10 cts. <sup>1</sup>
Rhode Island	1698	..	x	..	Within 10 days	....	Town Clerks	4 d.
	Oct. 1701	..	..	..	Within 2 mos.	....	.....	
	1814	..	..	..	.....	....	.....	
	1850	..	x	..	Within 3 mos.	....	Trustees of School Districts	
South Carolina	1852	..	..	..	.....	....	City and Town Clerks	10 cts.
	Dec. 20, 1853	x	x	x	.....	....	District and Parish Tax Collectors	3 cts.
	Dec. 20, 1856	x	..	..	.....	....	.....	5 cts.
	Dec. 21, 1858	x	..	..	.....	....	.....	3 cts.
Tennessee	Apr. 5, 1881	x	x	..	Within 30 days	....	County Court Clerks	5 cts.
Vermont	Nov. 17, 1856	..	..	x <sup>2</sup>	Annually	15 cts.	Town Clerks	5 cts.
Virginia	Apr. 11, 1853	..	..	x <sup>3</sup>	Annually	....	Clerks of County and Corporation Courts	
England	1855	..	..	..	.....	3 cts.	.....	3 cts.
	Aug. 17, 1836	..	x <sup>4</sup>	..	Within 42 days <sup>5</sup>	....	Registrar of District	
	June 30, 1837	..	..	..	.....	....	.....	
	Aug. 7, 1874	..	..	..	.....	....	.....	1 s.

<sup>1</sup> Register of County and City of Philadelphia, 6 cts.

<sup>2</sup> Does not apply to the Clerk of the City of Burlington.

<sup>3</sup> Physicians and heads of families must report to Commissioners of Revenue.

<sup>4</sup> Master or keeper of every jail, prison, house of correction, workhouse, hospital, etc. etc., shall, for the purpose of this Act, be deemed the occupier thereof. The master of a vessel shall report by mail to the Registrar-General, immediately on arrival at any port in the kingdom, births that may have occurred on his vessel.

<sup>5</sup> May be reported within six months to the Superintendent Registrar, who shall be entitled to 2s. 6d. fee for recording same.

*Table showing for each State having Registration Laws, the date of the Act, and mode of obtaining information with regard to Deaths.*

	Date of Act.	Who to report deaths.			Time of reporting deaths.	Fee for reporting deaths.	Who to record deaths.	Fee for recording deaths.
		Physician, midwife.	Parent, householder, etc.	Town, City, and School Officers.				
Alabama	Feb. 28, 1881	x	x	x	Proscribed by County Board of Health	....	County Health Officer	
California	.....	x	..	x	Quarterly	10 cts.	County Recorder	
Connecticut	Feb. 28, 1877	x	x	..	Within 10 days after burial	10 cts.	Town Registrar	10 cts.
Delaware	Jan. ses. 1878	x	..	..	Semi-annually	....	County Recorder of Deeds	10 cts.
Georgia	1862	x	..	..	.....	....	.....	5 cts.
	April 7, 1881	x	x	x	Quarterly	5 cts.	County Ordinary	
Illinois	Session Jan. and Feb. 1875	x	x	x	.....	....	.....	5 cts.
	Jan. 1876	x	..	..	.....	....	.....	
Indiana	May 25, 1877	x	x	x	Within 30 days	....	County Clerk	
Kentucky	Mar. 7, 1881	x	x	x	Within 15 days	....	Secretary of the Town Board of Health	
	1851	x	..	x	Annually	2 cts. <sup>1</sup>	Auditor of Public Accounts	
Maine	1878	..	..	..	.....	....	Secretary of the State Board of Health	
	Feb. 28, 1821	..	x	x	Within 6 mos.	....	Town Clerk	
	1865	..	x	x	.....	....	.....	

<sup>1</sup> To assessors only.

	Date of Act.	Who to report deaths.				Time of reporting deaths.	Fee for reporting deaths.	Who to record deaths.	Fee for recording deaths.
		Physician, midwife.	Parent, householder, etc.	Town, City, and School Officers.					
Maryland	1865	..	x	.. <sup>1</sup>	Within 6 mos. <sup>2</sup>	....		Clerk of County Circuit Court <sup>3</sup>	15 cts.
Massachusetts	Sept. 4, 1639	..	x	..	.....	....		Town Clerk or Register-keeper	3 d.
(Col. Mass. Bay)	Mar. 7, 1644 <sup>4</sup>	..	x	..	Within 1 month	....		Clerks of the Writs	3 d.
(Plymouth Col.)	Oct. 20, 1646 <sup>4</sup>	..	..	..	Within 30 days	....		Town Clerk	4 d.
(Prov. Mass. Bay)	1692-93 <sup>4</sup>	..	..	..	.....	....		.....	2 d.
	1742	..	..	..	.....	....		.....	4 d.
	1750	..	x	..	Within 6 mos.	....		.....	2 d.
	1796	..	x	..	Monthly	5 cts.		Clerks of the Cities and Towns	8 cts.
	Mar. 16, 1844	..	x	..	.....	....		.....	5 cts.
	May 2, 1849	..	x	..	Before burial	....		.....	35 cts.
Michigan	1878	x	x	..	Annually	10 cts.		Clerk of County or Township	25 cts.
Minnesota	Mar. 4, 1870	x	x	x	.....	....		Town and City Clerks	25 cts.
New Hampshire	June 25, 1855	.. <sup>6</sup>	..	x	Annually	....		do. do. do.	25 cts. <sup>7</sup>
	July 29, 1891	..	..	..	.....	....		.....	6 cts.
New Jersey	Mar. 3, 1848	..	x	..	Monthly	5 cts.		Clerks of Com. Council and Boards of Aldermen of Cities, and Cl'ks of Townships	10 cts.
	Mar. 19, 1851	..	..	..	.....	10 cts.		.....	5 cts.
	Mar. 11, 1862	..	..	..	.....	5 cts.		Clerks of County B'ds of Health where established	5 cts.
	Mar. 9, 1877	..	..	..	.....	....		.....	.....
	1879	..	..	under taker	Within 5 days after burial	.....		.....	.....
New York	Apr. 25, 1847 <sup>8</sup>	..	..	x	.....	Fixed by B'd of Supervisors		Town Clerks or one of the Aldermen of school districts	Fixed by B'd of Supervisors.
	May 29, 1880	x	..	..	Within 3 days	....		Town Clerks	.....
North Carolina	1881	..	..	x	Annually	....		Secretary of State	.....
Ohio	1880	x <sup>9</sup>	..	x	Annually	....		Probate Judge of Co.	.....
Pennsylvania	Apr. 14, 1851	x	..	..	Within 30 days	....		County Register of Wills	10 cts. <sup>10</sup>
Rhode Island	1698	..	x	..	Within 10 days	....		Town Clerks	4 d.
	Oct. 1701	..	..	..	Within 2 mos.	....		.....	.....
	1844	..	..	..	Within 3 mos.	....		.....	.....
	1850	x	..	..	.....	....		Trustees of School Districts	.....
	1852	..	..	..	.....	....		City and Town Clerks	10 cts.
South Carolina	Dec. 20, 1853	x	x	x	.....	....		District and Parish Tax Collector	3 cts.
	Dec. 20, 1856	..	..	..	.....	....		.....	.....
	Dec. 21, 1858	x	x	..	.....	....		.....	5 cts.
Tennessee	Apr. 6, 1881	x	x	..	Within 30 days	....		Clerk County Court	3 cts.
Vermont	Nov. 17, 1836	x	..	x <sup>11</sup>	Annually <sup>12</sup>	15 cts.		Town Clerk	5 cts.
Virginia	Apr. 11, 1853	..	..	x <sup>13</sup>	Annually	....		Clerks of County and Corporation Courts	3 cts.
	1855	..	..	..	.....	3 cts.		.....	3 cts.
	Aug. 17, 1836	..	x <sup>14</sup>	x	Within 8 days	....		Registrar of District	.....
England	June 30, 1837	..	..	..	.....	....		.....	.....
	Aug. 7, 1874	..	..	..	Within 14 days	....		.....	1 s.

<sup>1</sup> Sexton, coroner, undertaker, in the case of a stranger or friendless person.

<sup>2</sup> Sexton, coroner, or undertaker, within one month.

<sup>3</sup> Clerk of Court of Common Pleas of the city of Baltimore.

<sup>4</sup> General courts held at dates given.

<sup>5</sup> Persons appointed by City Council of Detroit.

<sup>6</sup> Physicians shall report to town and county officers.

<sup>7</sup> For obtaining and recording 50 cts., to Town and City Clerks.

<sup>8</sup> Provides especial regulations for New York City.

<sup>9</sup> In counties containing towns of 150,000 population and upwards, physicians must report quarterly.

<sup>10</sup> Register of county and city of Philadelphia shall receive 6 cents.

<sup>11</sup> Does not apply to clerk of city of Burlington.

<sup>12</sup> Physicians shall report within 15 days after burial.

<sup>13</sup> Physicians, parents, householders, coroners, etc., shall report to Commissioner of Revenue.

Table showing items of Registration in regard to Births, required in different States and Cities of the United States, and in certain Foreign Countries.

	Date of birth.	Place of birth.	Sex.	Colour.	Name.	Father's name.	Mother's name.	Birthplace of parents.	Father's occupation.	Age of parents.	Residence of mother.	No. of children by this mother.	Whether illegitimate.	Whether still-born.	Name of informant.	Parents' residence.	Date of record.
<b>STATES.</b>																	
Alabama <sup>3 6</sup>	x	x	x	x	x			x	x								
California	x	x	x	x	x					x							
Colorado	x	x	x	x	x												
Connecticut <sup>1 2 3 11</sup>	x	x	x	x	x	x	x	x	x	x		x	x			x	
Delaware	x	x	x	x	x	x	x	x	x	x		x	x				
Georgia <sup>10</sup>	x	x	x	x	x	x	x	x	x	x		x	x				
Illinois	x	x	x	x	x	x	x	x	x	x		x	x				
Indiana	x	x	x	x	x	x	x	x	x	x		x	x				
Iowa	x	x	x	x	x	x	x	x	x	x		x	x				
Massachusetts <sup>2</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	
Michigan	x	x	x	x	x	x	x	x	x	x		x	x				
Minnesota	x	x	x	x	x	x	x	x	x	x		x	x				
New Hampshire	x	x	x	x	x	x	x	x	x	x		x	x				
New Jersey <sup>1</sup>	x	x	x	x	x	x	x	x	x	x		x	x				
New York <sup>1</sup>	x	x	x	x	x	x	x	x	x	x		x	x				
Ohio	x	x	x	x	x	x	x	x	x	x		x	x				
Pennsylvania <sup>1 4</sup>	x	x	x	x	x	x	x	x	x	x		x	x				
Rhode Island <sup>3 2</sup>	x	x	x	x	x	x	x	x	x	x		x	x				
Tennessee <sup>9</sup>	x	x	x	x	x	x	x	x	x	x		x	x				
Vermont	x	x	x	x	x	x	x	x	x	x		x	x				
Wisconsin <sup>4</sup>	x	x	x	x	x	x	x	x	x	x		x	x				
<b>CITIES.</b>																	
Baltimore, Md.	x	x	x	x	x	x	x	x	x								
Boston, Mass.	x	x	x	x	x	x	x	x	x								
Burlington, Vt.	x	x	x	x	x	x	x	x	x								
Charleston, S. C.	x	x	x	x	x	x	x	x	x								
Cincinnati, O.	x	x	x	x	x	x	x	x	x	x	x						
Galveston, Tex.	x	x	x	x	x	x	x	x	x								
Mobile, Ala. <sup>6</sup>	x	x	x	x	x	x	x	x	x	x							
New Orleans, La. <sup>7</sup>	x	x	x	x	x	x	x	x	x	x							
New York	x	x	x	x	x	x	x	x	x	x							
Philadelphia, Pa.	x	x	x	x	x	x	x	x	x								
St. Louis, Mo.	x	x	x	x	x	x	x	x	x								
<b>FOREIGN COUNTRIES.</b>																	
Germany <sup>5</sup>	x	x	x		x	x	x		x				x				
Sweden <sup>5 8</sup>	x	x	x		x	x	x	x	x				x				
Austria	x	x	x		x	x	x		x				x				

<sup>1</sup> These States call for number of children now living.

<sup>2</sup> " " whether twins.

<sup>3</sup> " " parents' colour.

<sup>4</sup> " " names of other child or children living.

<sup>5</sup> This country calls for religion of parents.

<sup>6</sup> These places call for presentation.

<sup>7</sup> This city calls for mother's occupation.

<sup>8</sup> This country calls for civil condition of mother.

<sup>9</sup> This State calls for kinship of parents.

<sup>10</sup> " " if premature, period of utero-gestation.

<sup>11</sup> " " race.

Table showing items of Registration in regard to Deaths, required in different States and Cities of the United States, and in certain Foreign Countries.

	Name.	Sex.	Age.	Occupation.	Place of birth.	Civil condition.	Legal residence.	Duration of residence.	Place of death.	Date of death.	Colour.	Cause of death.	Complications.	Duration of disease.	Father's name.	Mother's maiden name.	Parents' birthplace.	Date of burial.	Place of burial.	Name of informant.	Date of record.
<b>STATES.</b>																					
Alabama	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
California <sup>2</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Colorado <sup>5</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Connecticut <sup>2,3,4</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Delaware	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Georgia	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Illinois	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Indiana	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Iowa	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Kentucky	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Maryland	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Massachusetts	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Michigan	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Minnesota	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
New Hampshire	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
New Jersey	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
New York <sup>1</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
North Carolina	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Pennsylvania <sup>1</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Rhode Island	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Tennessee <sup>8</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Vermont	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Virginia <sup>1</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Wisconsin <sup>1</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
District of Columbia	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
<b>CITIES.</b>																					
Baltimore, Md.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Boston, Mass.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Burlington, Vt.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Charleston, S. C.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Cincinnati, O. <sup>6</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Galveston, Tex. <sup>2</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Jacksonville, Fla.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Mobile, Ala. <sup>5,6</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
New Orleans, La. <sup>2</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
New York	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Philadelphia	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Portland, Me. <sup>4,9</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Richmond, Ind.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Richmond, Va.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
San Francisco, Cal. <sup>2,6</sup>	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Savannah, Ga.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
St. Louis, Mo.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Wilmington, Del.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

<sup>1</sup> These States call for name of husband or wife.

<sup>2</sup> These States and cities call for race.

<sup>3</sup> This State calls for maiden name of wife or widow.

<sup>4</sup> These places call for—If wife or widow, of whom?

<sup>5</sup> " " " " when and where disease contracted.

<sup>6</sup> " " " " previous residence.

<sup>7</sup> This State calls for hour of death.

<sup>8</sup> " " " " kinship of parents.

<sup>9</sup> This city calls for name of parent.

	Name.	Sex.	Age.	Occupation.	Place of birth.	Civil condition.	Legal residence.	Place of death.	Date of death.	Colour.	Cause of death.	Complications.	Duration of disease.	Father's name.	Mother's maiden name.	Parents' birth-place.	Date of burial.	Place of burial.	Name of informant.	Date of record.
<b>FOREIGN COUNTRIES.</b>																				
England <sup>1</sup> . . . . .	x	x	x	x	x	x	x	x	x		x		x	x					x	
Sweden . . . . .	x	x	x	x	x	x		x	x		x		x							
Brussels . . . . .	x	x	x	x	x	x	x		x		x		x							
Buda-Pest . . . . .	x	x	x	x	x	x	x		x		x		x							
Frankfort-on-the-Main . . . . .	x	x	x	x	x	x	x		x		x		x							
Hamburg . . . . .	x	x	x	x	x	x	x		x		x		x							
Vienna . . . . .	x	x	x	x	x	x	x		x		x		x							
<sup>1</sup> This country calls for—If wife or widow, of whom?																				

	Religion.	Mode of feeding infant.	Artificial nurses.	Illegitimacy.	Age of the oldest child.	Street and No. of house.	Story of house.	Day of death.	Hour of death.	Medical aid.	Prosperity.	Separate bed-rooms.	No. of rooms and lodgings.
Buda-Pest . . . . .	x	x	x	x	x	x	x	x	x	x	x	x	x
Frankfort-on-the-Main . . . . .	x	x	x	x	x	x	x	x	x	x	x	x	x
Hamburg . . . . .	x	x	x	x	x	x	x	x	x	x	x	x	x
Vienna . . . . .	x	x	x	x	x	x	x	x	x	x	x	x	x
Sweden . . . . .	x	x	x	x	x	x	x	x	x	x	x	x	x

The table relating to births shows that the following items are provided for in nearly all systems, viz., date and place of birth, sex, colour, and name of child; names, residence, and birthplace of parents, and occupation of father. The age of the parents, the number of the child in the family, its legitimacy, and whether born dead, are required in a less number of cases.

With regard to age, it is usual to note only the day, month, and year. In Germany the hour of birth is also registered. It has been recommended that in addition to the headings given in this table the date of the marriage, the weight of the child, and what may be called the social condition of the parents, should also be recorded; but I do not know that this has been required anywhere, with the exception of the social condition, *i. e.*, comparative wealth of the parents, which may be said to have been indicated in Sweden for the ten years 1851 to 1860, when the vital statistics of the population were given in four classes, viz., nobility, Protestant clergy, middle class, and labourers and operatives. M. Bertillon, the distinguished French statistician, who specially urges the importance of recording the social condition, proposes six classes for this

purpose, *i. e.*, those receiving public charity; those maintaining themselves, but having no servant; those having one servant, two servants, three servants, and four or more servants.

In any system of registration of births a distinct definition should be given of the term still-born, which would be better phrased, *whether born dead*. A child which has lived, *i. e.*, respired after birth, should not be reported as still-born. It requires both a birth and death certificate, and the latter should state the number of hours it has lived for the first twelve hours. The period of married life at which the birth occurs appears to have some determining influence upon the sex, and it is desirable to note, therefore, the date of the marriage and the number of children which the mother has previously borne. [See Bertillon, *Des modifications à introduire dans les registres de l'état civil*, *Bull. Soc. de méd. pub.* Paris, I., 1877, p. 249.] The table relating to deaths shows a general agreement as to the importance of the following items of record, viz., name, sex, age, occupation, place of birth, civil condition, legal residence, and colour of the decedent; and the place, date, and cause of death. The name of the father, the maiden name of the mother, the duration of the residence, the birth-place of parents, and the date and place of burial are also required in a sufficient number of cases to mark their importance. By civil condition is meant whether single, married, or widow. A better phrase is conjugal condition. The terms nationality and race are sometimes used, but they are not satisfactory substitutes for "birthplace of parents."

Whether it would be worth while to require in addition to "birthplace of parents" the descent, meaning thereby that the person was of Irish, German, French, etc., descent, although both his parents were born in this country, may be a question. The importance in a scientific point of view of determining the influence of race upon vitality is very great, and the United States is the one country in the world where such observations can be best taken. But it would be difficult to define descent in such a way that the returns under this head should have the same meaning, and unless the questions were taken up by the census, the information would be of comparatively small value. This will be explained hereafter.

There is much need of a systematic nomenclature of occupations for use in this country. Several attempts have been made abroad to prepare such a table, but none of them have met with general acceptance, and there is no uniformity in the reports. The best model at present is the list used in the Massachusetts report, but it is very incomplete.

The most difficult point in the registration of deaths is that relating to the cause, the report of which must be made by a competent medical man to be of any real value. Allusion has already been made to the system of verifying medical inspectors, employed in France and elsewhere. This system, however, by no means does away with the necessity of obtaining



from the attending physician a statement of the cause of death; for without this the verifying inspector would often find it extremely difficult to make out the true cause. This has been distinctly recognized in Brussels and Paris, and upon the establishment of a bureau of vital statistics in the latter city, and preparatory to publishing a weekly bulletin, the prefect of the Seine addressed a formal communication to the Academy of Medicine, requesting the co-operation of physicians in furnishing information as to the cause of death of their patients, and suggesting a method by which this could be done. The report upon this by a commission of the Academy, of which Lagneau was the reporter, forms, with the subsequent discussions a very interesting document. (*Rapport sur la co-opération des médecins traitants à la détermination des causes de décès. Bull. Acad. de méd., Paris, 1879, I. sèr., viii. 595.*)

That good results may be obtained without the employment of verifying inspectors, is shown by the experience of England and this country. It is also possible to obtain much, although by no means complete, information, as to causes of death without any special compulsory legislation as regards physicians. This was, in fact, the case during the first thirty-eight years of the English system of registration. The information as to the cause of death was obtained by the registrar in such manner as he best could. Since 1874 more accurate information as to the cause of death is obtained from the certificates which the medical practitioners of the country are compelled to give under penalty. Under this system there is a certain number of uncertified deaths of persons who have received no medical attendance during their last illness, the number varying from about one per cent. in London, to as high as nineteen per cent. in certain parts of the kingdom.

The number of uncertified deaths depends very largely upon the number of unqualified practitioners present in a given locality, since none but a practitioner whose name is borne on the medical register, and who therefore possesses the qualifications necessary for such registration, can give a death certificate which will be accepted by the registering authorities.

Of certificates of causes of death, as usually furnished, a certain proportion are worse than useless, since the cause is erroneously stated. This may be due to a desire to conceal the true cause from the family or others, as in cases of syphilis, suicide, alcoholism acute or chronic, etc., to carelessness, erroneous diagnosis, etc. Almost every practitioner will also meet with cases in which he does know what the cause of death was, and cannot obtain a post-mortem. The first difficulty, viz., the desire to conceal the true cause from the family and friends, was the chief topic of discussion in the report of the Paris Academy of Medicine, just referred to. Incidentally, also, and as another phase of the same difficulty, the occasional disagreements in diagnosis between the verifying inspector and the

practitioner are referred to, and as the interests of the latter are those especially represented by the Academy, it is natural that it should desire to protect his reputation and influence as far as possible. The plan approved by the Academy was that a copy of the report made by the inspector should be sent to the physician who had treated the case for his diagnosis.

The plan proposed by the Prefect was that the physician should mail direct to the Registrar a report giving the name and cause of death. It was also proposed that instead of the cause he should give a number corresponding to this cause in the official nomenclature. This plan has been long used in Brussels, and with good results. The main point is that no certificate as to cause of death, which is given to the nearest relative or the householder for transmittal, will in all cases give the cause of death accurately. This can only be secured by some system of confidential report to be sent by the physician direct to the registrar, and this is as strong reason for keeping the physician's certificate distinct from the one giving age, occupation, family relations, etc.

The second difficulty above referred to will be to some extent avoided by instructing the physician that in cases where he does not know the cause of death, and is nevertheless satisfied that it is due to natural causes, and does not require a coroner's inquest, he shall report as the cause of death apnoea or paralysis of the heart, or some similar name belonging to a group all of which the registrar will understand as being merely equivalent to "unknown."

Examination of the numerous discussions on this point which have occurred in statistical congresses shows that unless qualified physicians are employed as medical examiners the problem has been nowhere satisfactorily solved. Its difficulties appeared so great to a committee of the Royal College of Physicians of Edinburgh appointed to report on the best methods of framing public registers of deaths, that they strongly advised that practitioners should content themselves with stating the seat of the disease, and whether it was acute or chronic, and not give a name to the cause of death unless they had unequivocal evidence from a post-mortem or otherwise.<sup>1</sup>

All systems of mortality statistics are compiled on the principle that the number of cases of death and of causes of death must be the same. So long as this is the case it is practically impossible to give a full view of the causes of death.

If all the cases of death due immediately to renal disease are reported only under that head, many cases of scarlet fever, disease of the heart, etc., would not appear under those heads in the returns. So far as registration is concerned all the chief concurring causes of death should be recorded. The question as to how these are to be compiled need not be discussed here.

<sup>1</sup> Edinb. Med. and Surg. Journ. 1841, vol. 56; p. 142.

The only other measure which seems capable of effecting any considerable improvement in this direction is the adoption of a uniform nomenclature, and this will be effectual only so far as it has educational value.

The nomenclature question has been discussed in another report. Probably the new nomenclature of the College of Physicians of London, which should be issued this winter, will be universally adopted in this country.

The relative merits of different forms of record books and blanks cannot be discussed here, but attention is called to the fact that each primary record should be made on a separate and distinct card, slip, or sheet of paper, and not in a book. The reason for this is that these separate slips or cards can be corrected and added to much more easily than the book record which should contain no erasures, and furthermore that such cards are far more easily handled in compiling statistics than books or schedules.

In estimating the relative importance of certain items in the registration of births and deaths much will depend upon the possibility of obtaining similar or comparable information with regard to the whole living population by means of some form of census, national, state, or municipal. In other words, there should be as great correspondence as possible between the census forms and the registration forms to secure the best results in each. For example, if the census gives no information as to social condition or birthplace, these items on the registration forms lose much of their importance although they still have a certain value.

In general it may be said that whatever information with regard to living population is called for on the census schedules, should also be required with regard to the dead. It is not proposed in this paper to consider the form in which registration statistics should be published. The registration report of Massachusetts is upon the whole at present the best model for a State annual report.

Special attention is called to the difficulty of making reliable estimates as to the number of living population in a place for any year other than a census year. This is one of the greatest obstacles to the establishment of a reliable and useful system of vital statistics upon a uniform plan throughout the country. Of the various methods in use for estimating each year the population of a city in the interval between one census and another, no one by itself can be said to give any high degree of accuracy. An interesting discussion on this point will be found in the report of Dr. Russell, medical officer of health at Glasgow. The method of estimating employed by the Registrar-General of Scotland is to assume that the rate of increase as ascertained from the two immediately preceding enumerations continues the same during the course of the next ten years, each year's increment is supposed in following years to produce a proportional increase as in compound interest, so that the aggregate at the close of the decade is

greater than merely the percentage or increase calculated on the preceding census and added to the list. The method adopted by the sanitary department of Glasgow, is to ascertain from the number of the houses inhabited by the census population the average number of inhabitants per house, and then in each succeeding inter-census year to apply this average as a multiplier to the inhabited houses for that year entered on the roll of the city assessor. The accuracy of the first method depends on the continuance of the rate of growth, that of the second upon the continuance of the same average number of inmates in the inhabited houses of the city.

In the case of Glasgow, taking the two estimates above referred to, and comparing them with the number actually found by the census, the result showed that both estimates were in excess of the actual population, the excess being much greater by the first method than by the second.

The truth is that there is no formula which will not lead to gross errors if strictly adhered to. The tendency is always to overestimate the number of living population. The number of deaths in a large city is in itself a means of checking such estimates, for whenever in such a city the death-rate is reported as being for a whole year less than 19 per 1000 it may be considered as certain that either the deaths are not all reported or the population is overestimated, the latter being usually the principal source of error.

The more familiar I become with the results of registration in the United States, the more I am confirmed in the conclusions of my previous report on this subject (see *National Board of Health Bulletin* of February 11th, 1882, vol. iii. p. 295), viz. that the general government should take the matter in hand, and through a permanent census bureau, or through the National Board of Health, secure, by paying for them, uniform and complete registration returns from the several States.

In conclusion, I wish to express my obligations to numerous correspondents for information and suggestions on this subject, and especially to the director of the Statistical Bureau of Sweden, M. Sidenbladh, to Oberstabs Arzt Dr. Frölich, of Leipzig; Prof. Carl Böhm, of Vienna; Dr. Fornoni, of Milan; and to Drs. E. M. Snow, of Providence; G. P. Conn, of Concord, N. H.; F. H. Gerrish, of Portland, Me.; H. D. Fraser, of Charleston, S. C.; T. F. Wood, of Wilmington, N. C.; S. S. Herriek, of New Orleans, La.; and F. W. Hatch, of Sacramento, Cal. I am also indebted to Dr. T. J. Turner, U. S. N., for much assistance in obtaining copies of the various State acts relating to this subject.

## ARTICLE III.

THE COLD-WATER TREATMENT OF PUERPERAL FEVER, ACCORDING TO THE METHODS OF W. WINTERNITZ AND CARL V. BRAUN, OF VIENNA.<sup>1</sup> By RUDOLF TAUSZKY, M.D., Attending Gynecologist, Mount Sinai Hospital, O. d. Dept., New York.

THE results obtained by any known method of treatment in cases of septic poisoning, during the puerperal state, are, as a rule, very unsatisfactory indeed; still, some lives have been saved by the following means, which, as far as I am aware, are not yet sufficiently known and appreciated by the profession. I, therefore, feel warranted in urging its trial in given cases where other resources and modes of practice seem to be useless. I refer especially to the beneficial effects obtained by the hydragogue or cold-water treatment of puerperal fever, in the manner advocated by me in 1875, in a paper read before the New York Medical Journal Association "On the Cold-water Treatment of Fever." The principal object of the administration of the cold baths is the reduction of fever heat, if of great intensity and of long duration. The baths ought to be given without the least exertion on the part of the patient, as often as the temperature taken in the axilla indicates a rise of two or more degrees Fahrenheit. The water used for this purpose should be of about seventy to fifty-three or even less degrees Fahr., or, exceptionally, in very weak patients, of about eighty degrees; the patient to remain in the bath from fifteen to twenty minutes at a time. Before administering the bath, the precaution should always be observed of first cooling the head, by covering it with a cold wet cap or cloth, in order to prevent the sudden congestion of the brain which would otherwise follow.

If the temperature does not rise above one hundred and one to one hundred and two degrees Fahr., the simple ablution or sponge bath is very valuable. This procedure, however, if repeated too often, rarely lowers the temperature more than two to three degrees, and when reaction sets in we find the fever higher than before. As a rule, therefore, simple sponging with cold water produces rather an elevation than a reduction of fever heat, if not followed by more active measures. The sponge bath has, however, a good effect on the patient as a nerve stimulant, and produces, moreover, a very comfortable feeling, and is very agreeable to the sufferer for a short period of time; it may be made use of as a preparatory method to the half bath, to be described presently, and for the purpose of strengthening the patient's confidence, and to influence the vessels of the skin, preparing them for the greater giving off of heat under further hydropathic treatment.

<sup>1</sup> Read before the Obstetric Section of the New York Academy of Medicine, Feb. 23d, 1882.

The friction bath, by means of a wet sheet, dipped in cold water of from sixty-two to fifty-three degrees Fahr., well wrung out and wrapped around the patient, is a more useful method of using cold water for the purpose stated. Before applying it, or any other method known as the cold-water treatment of fever, we always have to use the precaution of first cooling the head by cold applications. The friction bath is a powerful nerve stimulant, since all the peripheral nerves in the large territory of the skin are thereby stimulated the very moment of their contact with the sheet. This effect is experienced by any one who, while in a drowsy, sleepy state, or in a condition benumbed by a severe exposure to cold, rubs his face or extremities with cold water, ice, or snow. The friction bath also causes a dilatation of the bloodvessels of the periphery, which, as a matter of course, must produce its beneficial effects upon the distribution of the blood currents throughout the whole body. The relation of pressure and tension in the whole system of bloodvessels, is of great influence on the heart's action. The friction bath will not only abstract fever heat, it will lessen coma, delirium, cephalalgia, and other brain symptoms, and the hyperæmic states and inflammations of internal organs. The diminution of the frequency of the pulse and the calming of the violent action of the heart are of great importance for the neutralization of the febrile disturbance in puerperal and other fevers. By the use of the wet sheet and by gently rubbing the skin, we increase the evaporation from its surface fully fifty per cent. as proved by Weyrich. We have here, therefore, a nerve stimulant, a heart sedative, and an antipyretic, or antifebrile remedy par excellence, unequalled by any internal medicine. When the skin is dry, the urine scanty, concentrated, high-coloured, loaded with urates and phosphates, and the bowels sluggish, the secretions of bile reduced to a minimum, the pepsine glands and the pancreas backward in supplying the digestive juices, and the salivary glands also dormant as to their secreting function, we need no calomel or any other drugs, we simply administer plenty of water to drink, and apply the cold wet sheet, and by gently rubbing the skin until it gets red, we increase all the secretions and excretions of the body, and the evaporation of water (diaphoretic action) from the surface of the body, and aid the retarded elimination of used-up material; we are thus enabled, by a harmless procedure, scientifically to neutralize, to some extent, febrile disturbances, which, by themselves, often destroy life. I have often observed that after the rubbing, the burning skin became soft and moist, covered with a gentle perspiration, the pulse came down in frequency, the heart-beat gained in strength, the hurried respiration was reduced to a more normal state, and the urine became clearer and more natural in colour, etc. A little cold water, a few bed sheets, and a person to apply them, are all that is needed. By pouring cold water upon the sheet from time to time, as soon as it appears to get dry, we increase its heat-abstracting properties. By wrap-

ping the patient in two wet sheets at the same time, we are enabled to abstract a double quantity of heat. An ordinary cot or bed, or a sofa with a rubber sheet spread over it for the patient to rest upon, is, of course, to be prepared before applying the sheet. The abdomen, or other painful parts, ought to be covered with cold wet cloths; colder portions, the hands and feet, for instance, are to be rubbed until they get warm. By continuing this method until the temperature is reduced to the normal standard, we obtain surely the most beneficial effects, at least, in some cases of puerperal fever, which would terminate fatally if otherwise treated. The abstraction of fever heat also retards and often prevents the chills, which indicate the severity and the gravity of the attack.

A still more potent method of treating puerperal-fever patients is the administration of the so-called half bath. A common bath-tub is placed near the bed, filled to the depth of six or eight inches with water of from fifty-three to seventy degrees Fahrenheit, exceptionally of eighty degrees in very feeble patients; the sufferer, prepared by a previous cold sponge bath and gentle rubbing, with a wet, cold cloth or cap on her head, is gently and cautiously put into the bath, and, by means of an ordinary pitcher, the water is poured upon her neck and shoulders, her skin all over being briskly rubbed at the same time, by herself if able to do it, otherwise by the attendant, more or less force being used, according to the state of her bloodvessels, as indicated by the colour of the skin. Unconsciousness, delirium, symptoms of great irritation of the brain, or pressure upon it, may be relieved by douching, the distance of the fall to be proportionate in height to the disturbance of the functions of the sensorium. If the patient be able to wash her face during these showerings, the procedure will be less disagreeable to her. If the patient is afraid of the cold shower-bath, several layers of cloths may be laid over the head, and the water poured upon it. It will be rare, indeed, to find a patient leaving the bath without having become conscious, or, at least, partially so, if she be rubbed briskly at the same time. The disagreeable feeling of chilliness will soon be overcome after entering the tub, even in the colder bath. It has been found good practice to use water of a higher temperature, at first, in order to overcome the sensibility of nervous patients, the water used to be about sixty-five to sixty degrees; by and by we can use and add cooler water, down to fifty degrees Fahr. By adding cooler water gradually, we do not cause so much nerve excitation as would follow if the lowest temperature were used at the beginning. Only where we find an indication to exert a potent nerve stimulant, as in sopor and in conditions of coma, do we use water of very low temperature from the first. Too cold baths are objectionable for the following reasons:—

1. Too cold water is too powerful a nerve stimulant and would soon exhaust the patient; but, if the nervous system is very much depressed, if

sopor or coma have supervened, I repeat, this powerful stimulant of a very cold shower bath finds its rational and beneficial application. We accomplish our purpose best under the circumstances by placing the patient in a tepid bath or in an empty tub, pouring the cold water upon her from a height in proportion to the severity of the brain symptoms. The abstraction of heat must take place gradually and slowly in order to prevent a too severe reaction. The patient is to remain in the half bath until her temperature in the axilla shows that the fever has been reduced to the normal standard. The skin must become red, never bluish or pale; the circulation of the whole body must be equally distributed. This result we obtain by rubbing. It may be laid down as a rule, in no matter what way the hydropathic method is applied, the patient should never feel chilly while in the bath, and as soon as her skin becomes bluish, she is to be taken out and put to bed and some warm drink with a little stimulant administered. The antipyretic bath need seldom exceed fifteen or twenty minutes, but exceptionally, in otherwise strong women with a rapid production of heat, the bath may be continued for half an hour and over at a time. The bath is to be repeated as soon as the fever returns, day or night. I have given as many as a dozen half baths within twenty-four hours, and have never regretted the frequent application of the same.

In great depression or collapse, we must have recourse to the most powerful irritating procedures, such as the half bath with water from sixty to fifty degrees Fahr., and the cold douche. If the urgent symptoms are removed, we again use warmer water. If in spite of these measures the skin remains hot and dry, I use the wet-pack. In very weak patients with exceedingly high temperatures, where a sudden collapse might be feared from moving about or sitting in a half bath, we spread a blanket on a second bed or sofa, over it we lay smoothly one or more sheets well wrung out in very cold water, and wrap the patient in them so that the coverings, the sheet and the blankets, adhere closely to her body. If the fever increases during this treatment, we loosen the coverings at once and place her in a second sheet and again tighten the blanket around her. After each packing the production of heat becomes less, until at last the skin becomes moist and warm and the temperature normal or even less.

After the packing the patient is to be sponged off, in order to eliminate the accumulated heat from the surface of the body, to give tone to the relaxed skin, and to moderate the rush of blood to that organ. It is of the utmost importance to see that the extremities become warm during the packing, the contrary being a sign of an unequal distribution of blood by the contraction of parts and the relaxation of the bloodvessels of other portions of the periphery. The principal rule in applying the cold-water treatment is its methodical repetition, as based upon rational and scientific principles. The continued lowering of the fever heat must be our aim. We use as few applications as possible during the twenty-four hours; still



we must not permit a single exacerbation to be left unabated, either during the day or during the night. The tender and painful parts, especially the abdomen, are to be covered with wet cloths, as already stated. A bed sheet folded four, five, or six times, well wrung out of cold water, should be placed over the abdomen and the back from the lumbar region down to the sacrum, and a large dry sheet applied over the wet one to prevent the wetting of the bed. The application is changed every hour. Tympanites and abdominal pain are usually greatly relieved by these so-called Brand's or Priessnitz's applications.

After administering the cold bath it is a good plan to wrap the patient in blankets without being dried, and after she is put to bed to give her a glass of wine or a little brandy and water to guard against chilliness. Very weak patients require warmer baths in the beginning, say of about eighty degrees Fahr.; the cold pack is well borne, even by weak patients, especially if the hands and feet are left uncovered. Four packings of from ten to twenty minutes each have the same effect as a cold bath of ten minutes' duration. Cold applications and ice-bags are efficient as heat-reducing measures if used over large portions of the body. Dr. Thomas Addis Emmet kindly showed me a few months ago, at the New York Woman's Hospital, a patient upon whom he had performed ovariectomy a few days before, where a coil of soft rubber tubes was placed over the abdomen, through which, siphon like, a constant stream of cold water was flowing. A similar contrivance, made of tin, placed over the patient's head, was used as a heat-reducing agent with great benefit and to the doctor's entire satisfaction. These tubes were devised by the house-surgeon, Dr. Townshend, after the recommendation of Dr. Chamberlain of this city, and are similar to the tubes sold by instrument-makers under the name of Leiter's tubes. Another good plan of using cold water is to put the fever patient upon water-beds or cold water rubber pillows, provided always these come in contact with large surfaces of the body. By wrapping the patient's trunk in cold, wet sheets, each application being continued for several hours, and placing ice-bags over the inguinal region, we reduce the fever heat, and, in some instances at least, will, as experience teaches, save fever patients who could take neither quinia nor salicylate of soda; this water treatment alone being continued for one or two weeks.

There is still a great prejudice among the laity as well as among medical practitioners against the cold-water treatment; no doubt, from the fact of their want of experience in applying the methods here recommended in accordance with scientific principles. It may be well to remind those who are fearful of evil consequences arising from the application of the cold-water treatment, that *a fever patient does not show any tendency whatsoever to take cold*, according to my experience and that of many reliable authorities, if the method is applied scientifically.

By drinking cold water, taking ice, and cold rectal injections, the fever is, as a rule, but slightly reduced; but rectal irrigations from a fountain syringe, applied through a large soft tube, introduced high up into the rectum, and continued for hours, have a decidedly antipyretic effect. Bartels and Jurgensen have obtained excellent results in the treatment of high fever by cold baths, applied day and night, repeated as often as the thermometer, placed in the axilla, indicated a rise in the temperature. From four to eight, in severe cases even twelve baths were given during twenty-four hours. One hundred and sixty typhus patients thus treated by Liebermeister, from 1863 to 1866, showed a mortality of only three and one-tenth per cent. Wiltshire and Playfair, the latter the author of a valuable work on the puerperal state published last year, also highly recommend the energetic use of cold baths, if quinine, laxatives, and intra-uterine injections prove fruitless, in the treatment of puerperal fever. As is well known, quinia has a decidedly antipyretic effect; therefore no remedy is so extensively used in the treatment of fevers as the preparations of cinchona. But the question in medicine is not only what to use but how to use a given remedy to produce the desired effect, and perhaps it may not be so well known that reliable and trustworthy experiments have shown that quinine is to be given in decidedly large doses, say from twenty to forty grains in one or two doses, one to two hours before or after any food or drink has been taken, otherwise it causes nausea and often vomiting; the dose mentioned to be repeated but once in forty-eight hours.

According to Liebermeister, the effect of quinine should be to reduce the temperature to about  $98\frac{1}{2}^{\circ}$  F. ( $38^{\circ}$  Celsius). If this is not accomplished by the first dose, the second dose is to be increased. If the temperature is found to be below the normal after the administration of quinia, the dose is to be decreased. If, however, forty grains at a dose do not reduce the fever heat, digitalis in pill or powder might be tried with the quinia, ten to twenty grains of the former (of pulv. fol. digitalis purp.) taken during twenty-four hours in one- or two-grain doses, to be immediately followed by one dose of from thirty to forty grains of the muriate of quinia; or, if typhoid symptoms are present, the same quantity of the hydrobromide of quinia taken in capsules or wafers. Before taking the quinia the patient is given a piece of chocolate to correct the bitter taste of quinia. As a corrigent the comp. elixir of taraxacum and the syrup of coffee have proved in my hands very pleasant additions to quinia if given in solution or mixture. Salicylate of soda is ten times cheaper than quinia, and is used in its stead in Vienna, forty-five to ninety grains pro die, to be repeated daily until the fever has subsided. Salicylate of soda as well as the muriate of quinia, fifteen to thirty grains of the latter, may be taken with advantage per rectum with tinct. opii, either by injection or in a suppository of ol. theobroma. Their effect is the same as if given by the mouth. The freshly prepared tincture of eucalyptus globulus,

from one to four drachms daily, as recommended by Herz (1874), Osterlot, Winckel, and others, is sometimes also found useful.

The heat-reducing agents should be used principally in the evening or during the night. The antipyretic remedies, quinia, salicylate of soda, often produce a soothing and quieting effect, especially if used about midnight. Alcoholic stimulants also greatly aid in reducing fever heat. Alcohol is an important analeptic, dietetic, and fever-reducing agent, the more so if the pulse is weak, and syncope or heart paralysis threatens. According to Binz, Bouvier, Riegel, Strassburg, and Daub, brandy or Jamaica rum should be freely given if salicylic acid is used, the latter antipyretic agent having a very depressing effect upon the heart's action. Pure Jamaica rum contains seventy-seven per cent., brandy fifty per cent., and wine seldom over ten per cent. of alcohol. Rum may be administered with advantage in teaspoonful doses with an equal quantity of sugar and water, day and night, every hour, so that about three ounces be taken during twenty-four hours. After the fever is reduced, teaspoonful doses every two hours suffice.

The observations of Breisky, Konrad, Schröder, Spiegelberg, and Braun, 1875, are positive proof of the fact that in severe cases of puerperal fever alcohol has a decidedly antipyretic effect, producing considerable reduction of fever heat, if taken every half hour. The secretion of milk is thereby not decreased but increased.

The best treatment of puerperal fever, stated in so many words, seems to be a combination of cold baths or the wet pack, quinine or salicylate of soda; sometimes with, oftener without digitalis and alcohol. In conclusion I will say a few words more regarding the value of intra-uterine, disinfecting injections for the treatment of puerperal fever. In the beginning, and if the temperature is not very high, vaginal injections of a two or three per cent. watery solution of carbolic, lukewarm water is all that is required. In tympanites and endometritis the injections of salicylic or carbolic acid are made during the puerperal state, as I have already stated, when I condemned the indiscriminate use of this measure after normal labour, without febrile symptoms.<sup>1</sup> I generally irrigate the uterine cavity with about a quart of lukewarm water containing in solution twelve to sixteen grains of pure salicylic acid, and continue its use until the irrigated fluid returns free from clots, shreds, mucus, etc., without perceptible odour, and appears to be clear and colourless; as soon as the lochia become offensive I repeat the procedure, and I may state I have saved several lives by this medication. Yet we have abundant testimony from good authorities to show that intra-uterine injections are not without danger; for instance, Fritch and Herdegen in 1878 saw them followed by convulsions, acute mania, and chills, even when only a one-half per

<sup>1</sup> See my article in Philadelphia Medical News, August 19, 1882.

cent. watery solution of carbolic acid was used. The bad symptoms were caused by the admission of air into the veins. One fatal result from intra-uterine injections of a one per cent. solution of carbolic acid was reported by Bruntzel in 1879, it having occurred in the late Professor Spiegelberg's clinic, where, on the fourth day, on account of fever and fetid lochial discharge, the uterus was irrigated with a one per cent. solution of carbolic acid. The patient lost consciousness, and died in spite of all the efforts made to resuscitate her. The post-mortem examination, however, did not reveal the cause of the sudden collapse and death. The patient died from shock in the same manner that some persons have lost their lives from a blow upon the stomach or the testicle. Veit, like myself, never had any accident in 450 intra-uterine injections through a rubber tube, while in 400 cases made through a catheter he had ten. Hard rubber or glass tubes are objectionable for, in the most skilful hands, they are apt to wound the endometrium, and thus become sources of danger to the patient.

The cases in which Veit irrigated the uterine cavity were, 1st, eight cases that came under his care twenty-four hours after the first chill; all of these recovered; 2d, where there was diphtheria of the vulva and vagina; no deaths; 3d, cases where he was called to moribund patients; of five of these *one* recovered, two died on the tenth and the twentieth day respectively. The autopsy showed the uteri of both in a healthy condition.

In 1879 Thiele, upon Schroeder's recommendation, applied as a local antiphlogistic measure in puerperal fever, drainage and irrigation of the uterus with ice-water. This cold drainage he found useful in tympania uteri. He commenced twenty-four hours after delivery; there was fever, and he continued to irrigate the uterine cavity day and night from two to five days, until the temperature was reduced or peritonitis followed; in the latter case, of course, the irrigation was at once discontinued. In exudations of the parametrium, so called pelvic cellulitis, warm moist applications are preferable to cold applications. In Vienna, in such cases, moist heat is applied by means of so-called Priessnitz application, viz., a large towel folded into four or six layers, dipped in cold water, applied over the painful part, covered by a dry sheet so as to avoid wetting the bed or clothing, and left in situ an hour or more until it gets hot, and is found steaming when taken off; it is to be reapplied in the same manner until the pain and the exudation have subsided. It is hardly necessary to add that absolute rest in bed is to be insisted upon as long as there is fever, to prevent the formation of pelvic abscess. After the fever subsides local applications of one part of iodoform to ten of collodion, with the addition of some peppermint oil or balsam of Peru to mask the unpleasant odour, made over the seat of the exudation if any remain, and later on warm baths, are found to be quite beneficial. If the pain is

severe, and cannot be relieved by anodynes and the local application of icebags, three or four leeches applied to the intra-vaginal portion of the uterus may be tried.

Pelvic abscesses with a dull percussive sound ought to be punctured through the vagina or the abdominal wall, and the pus aspirated with Dieulafoy's aspirator, or an air-tight syringe. The cavity should be syringed with an antiseptic fluid, and a drainage tube, with several openings at the sides, placed deep into it, well secured by a Listerian bandage. The antiseptic irrigations are applied once or twice daily, or even oftener, until the discharge ceases, then the drainage tube may be removed. In migrating erysipelas, in addition, general applications of salicylated powder one to ten of starch, or salicylated water 1 : 1000, usually cause its disappearance, and the skin becomes pale and natural-looking. Deep and necrotic portions of the vulva require the application of charcoal, camphor wine, or coal tar. In cases of extreme meteorismus and dyspnoea, the aspiration of the intestinal gas, and the high irrigation of the colon by means of a large, soft, rectal tube, after Simon's method, improve the respiration, and have proved highly beneficial in my hands in a number of cases.

#### ARTICLE IV.

HÆMOPHILIA. By THOMAS D. DUNN, M.D., of West Chester, Pa.

THE following cases of hæmophilia appear of sufficient interest and importance to justify their publication. On this side of the Atlantic the disease has received very little attention, and, judging from the few cases recorded in our medical journals, must be quite rare.

*New Jersey Family.*—Mr. W.'s father and mother both healthy, but two of his sisters were afflicted with rheumatism of the large joints. He married Miss J., who sprung from healthy parents, and by whom he had two daughters. Anna, æt. 35, has dark hair and blue eyes. The hemorrhagic tendency first appeared on lancing gums. She frequently bled from nose in childhood, and, sometimes, to an alarming extent. Cuts and scratches were followed by profuse hemorrhages. Previous to bleeding she often became flushed in face, restless, and very excitable. As she grew older the hemorrhages diminished both as to frequency and severity, and at 12 years of age they had ceased altogether.

She married J. H., and had three daughters and one son. 1. Martha commenced to bleed when two months old, and at eleven months she bled for hours from nose, losing an alarming amount of blood. It was followed a day afterwards by inflammation of the bowels and death. There was no autopsy. 2. Lizzie commenced bleeding during her first year, and died at two years of age of epistaxis, after bleeding twenty-four hours. She had repeated attacks, and previous to a hemorrhage her face was always flushed. Her hair and eyes were dark. 3. Mary showed symp-

toms of the disease in her second year. She was a delicate child, and died of hemorrhage of the nose in third year. They generally took place at night. In her last attack Dr. A. H. Smith, of Philadelphia, was called in consultation after many styptics had been unsuccessfully tried. He plugged the posterior nares without success. 4. The son, aged four, exhibited no signs of the hemorrhagic tendency until last March, when he had, without conscious injury, a profuse hemorrhage from a point above the upper incisor teeth. It bled frightfully for hours, and was arrested by Dr. Smith with a compress and bandage. Mrs. H.'s sister has never showed any disposition to bleed. In both the daughter and her mother slight blows were followed by marked swelling, which rapidly turned purple. The children were active and seemed intelligent.

Through the kindness of the attending and resident surgeons I was permitted to take the following notes of a case in the hospital of the University of Pennsylvania:—

E. K., æt. 26, single, laborer, was admitted, June 30th, '82, with a lacerated finger, which required amputation. It bled profusely at the time of operation, and continued to ooze for hours afterwards. The day following there was an alarming hemorrhage, which required many ligatures to control. A few days afterwards a palmar abscess formed, and when incised bled violently. A second one formed which, on incision, likewise bled. In both instances the hemorrhage was controlled by packing the wound with lint and the application of a firm compress. The disease first appeared when patient was a small boy. On two occasions he bled profusely for hours from slight wounds of extremities. Several times his life was despaired of from attacks of epistaxis. Previous to an attack he felt heavy and dull. Trifling blows would cause enormous swelling, which soon turned dark. Has always been delicate, pale, and thin. Generally a moderate drinker, but has noticed that a debauch usually brought on a severe hemorrhage of the nose. Has had rheumatism and swelling of knee and shoulder-joints, which do not seem influenced by changes of weather. On examination of eye ground no alterations were detected. There was extreme pallor of the disks, and the arteries and veins were not distinguishable, so far as color was concerned. His father died of hemorrhage of the lungs; mother is alive, but has been a bleeder from infancy, her hemorrhages being both spontaneous and traumatic. Had one brother that died of croup in infancy.

*Lancaster County Family.*—M. S. bled from infancy, and died of hemorrhage at the age of fifty. His bleedings were from the nose, and caused by slight injuries. It is not known whether he had brothers and sisters, and no information can be obtained as to his parents or grandparents. He had two daughters, the older of whom went West, and has not been heard of since. She had not the bleeder disposition in infancy. The younger, M. S., bled from childhood, principally from the nose.

She married L. B., and by him had one son and seven daughters. There was no flooding at her deliveries. 1. Benjamin began to bleed in infancy from nose and tongue, which seemed to arise from small ulcers on margins of tongue, and in nose. They disappeared, with the tendency, at puberty. He married and had eight children, none of whom have shown any evidence of the disease. 2. Anna bled early, from nose and gums. She married Mr. S., by whom she had four children, of whom only one son is a bleeder. 3. Catharine was subject to severe attacks of epistaxis

from birth, at times her life being despaired of. She died at 32, cause unknown.

She married Mr. H., and they had two children. (1) Mary, not a bleeder, she married W., and has two sons and one daughter. The sons are not bleeders, but have a very pale complexion. The daughter, æt. 7, has light hair and blue eyes, and a pale waxy skin. She has from birth bled from the nose, and at times the hemorrhages have threatened life. Attacks of epistaxis generally occur at night, and follow excitement or exposure to the heat of the sun. Small ulcers could be detected over middle turbinated bones. The ophthalmoscope revealed an exceedingly pale and anæmic eye ground.

(2)<sup>1</sup> C. S. B., æt. 43, farmer, has bled from nose almost daily from childhood. The blood clots firmly and quickly. Has had severe hemorrhages after extraction of teeth, and has been troubled with rheumatism of left knee. He has dark hair and eyes; lips thin and pale; complexion sallow and waxy; tongue and mucous membranes pale. Head slightly hypertrophied, and liver enlarged. Complains of dyspnoea on slight exertion. Has ecchymoses on face and in mouth. On examination of nose on right side two small, round, and slightly depressed ulcers are seen over middle turbinated bone, one of which is covered with a crust, which bleeds profusely on removal. He is married, and has two sons and one daughter.

(a) Harvey, æt. 11, has bled from birth. (b) Jefferson, æt. 9, has shown no signs of disease. (c) Anna, bleeds from nose—generally at night. There is no trace of gout, serofula, or tuberculous in any of the branches of family, and nearly all the members have dark hair and eyes.

*C. Philadelphia Family.*—Mrs. C.'s maiden name was B., and her mother was an F. The history of the F. family cannot be accurately obtained, but it is known that several members were bleeders and some died of hemorrhage. The B. family has a tubercular history. Mrs. B. (F.) was herself healthy. She has a brother, not a bleeder, is married and had five boys, four of which are living and have no disposition to bleed. She has one sister, healthy, married, and has one daughter whose boys are bleeders while the girls are exempt from the disease. She also has a half sister by another mother, whose children have escaped the bleeder tendency. Mrs. B. (F.) had several children who, except one daughter, died in infancy, the cause of death unknown.

This daughter married C., the family under consideration. She had thirteen children—eight boys and five girls. No. 1, boy, commenced bleeding in the fifth year from a slight injury of the toe. It was checked at the time but swelled, and on separation of slough a frightful hemorrhage ensued which ended with the death of the patient, two days afterwards. No. 2, boy, died of umbilical hemorrhage after bleeding fifteen days dating from birth. No. 3, boy, manifested the tendency in infancy. Every cut or abrasion was attended with profuse and prolonged hemorrhage. As the father described it to me, the bleeding continued until the blood would scarcely colour a white cloth. The exhaustion was followed by a deep sleep, from which he awoke to a slow recovery. At the age of twenty-two he slipped, and in an attempt to save himself ruptured a bloodvessel, from which he died of internal hemorrhage three days afterwards. Nearly all the ordinary means of arresting hemorrhage were tried, and what at one time seemed efficacious failed at the succeeding hemorrhage. He

<sup>1</sup> This man was made the subject of a clinical lecture by Dr. Pepper in University Hospital, which was reported in Philadelphia Medical Times, Nov. 19, '81.

frequently bled from the nose, and was troubled with swelling of the joints. No. 4, boy, had hemorrhages from birth, but they were not of an alarming character. He died at the age of twenty-one of hæmoptysis after bleeding two days. No. 5, boy, began to bleed at an early age. At one time his life was imperilled by hemorrhage from a wound of gum inflamed by a tooth-pick; on another occasion by a scratch of frænum linguæ. He was always pale, and had frequent attacks of epistaxis, and subcutaneous ecchymosis. He married, and has one son and one daughter, neither of whom, as yet, have presented any signs of hæmophilia. He died of hæmaturia in his twenty-ninth year. No. 6, boy, is affected with rheumatism of knee and elbow-joints. Sometimes the entire leg swells and turns purple. The attacks are at short intervals and exceedingly painful. No. 7, boy, also showed signs of the diathesis at an early age; he went West<sup>1</sup> and his history is incomplete, but the father states he continued to bleed when last heard of. No. 8, boy, has never exhibited the hemorrhagic disposition. The girls have shown no signs of the disease. One is married and has a non-bleeder daughter. There is no history of gout or of intermarriage of relatives in the family.

*Chester County Family.*—Mrs. G. (W.) was one of a family of nine children. They were all healthy but one son, R. W., who bled throughout his life, having severe spontaneous and traumatic hemorrhages. He suffered from rheumatism. It is claimed the tendency to bleed originated in the mother's family.

Mrs. G. (W.) had four sons who were all bleeders. They all have dark hair and eyes. 1. John, at 10 years of age, was struck by a stone on the forehead. The surgeon failing to arrest the flow of blood cut down to ligate the temporal artery. This increased the hemorrhage, which proved fatal in a few hours. 2. Ober, at 2½ years of age, fell and cut his tongue; the hemorrhage from the wound proved fatal. He had shown a disposition to bleed before the accident. His mother describes him as being "all out of shape and troubled with rheumatism." 3. Milton was a bleeder from infancy, and died at 28 of cerebral hemorrhage, following a fall. 4. Worrall had from birth spontaneous hemorrhages from nose, kidney, and bowel. These were especially liable to occur during the summer months. He was a constant sufferer from rheumatism of right knee. Sometimes after exposure to cold or damp the knee would swell, become painful, and rapidly undergo discoloration. He was always weak and pale. The tendency to bleed disappeared at 30, and he died at 63 years of age from other causes. He married and had a number of children; several died from the diseases of childhood. Three sons and one daughter survive, none of whom bleed, but the youngest son is troubled with swelling of the joints.

After collecting the above history my attention was called to a bleeder family in Delaware County, the members of which I find are the descendants of R. W., previously described as a bleeder. A daughter handed me notes taken by him at the time of a hemorrhage, from which I extract the following: On the morning of December 27, 1827, he had third upper molar tooth of right side extracted. It continued to bleed with one slight intermission until 10 P. M. Early next morning he was awakened by a profuse hemorrhage, which continued for hours, but was finally arrested

<sup>1</sup> Since collecting the above family history, I find a report by Dr. Holton, of New Harmony, Indiana (*Amer. Jour. Med. Sci.*, 1874, p. 414), of a case he attended in several hemorrhages, which I take to be the same man.



by packing the socket with lint. The hemorrhage soon returned, and on consulting a dentist, the actual cantery was repeatedly applied without success. At 11 A. M. a physician was called who employed various styptics which were also inefficacious. In the afternoon it became so alarming Dr. R. Coates,<sup>1</sup> of Philadelphia, was summoned, who applied a compress and held the jaw with a firm bandage. It continued to bleed with intermissions until the following day, when he was left "almost bloodless." He died in his forty-second year of "rheumatism of heart."

He had two sons and three daughters, who were not themselves bleeders. 1. Sallie married and had two sons and one daughter. One son bled from infancy from the gums, and died in his fourth year of hemorrhage after biting his tongue. He suffered from joint trouble. The other children have thus far escaped the bleeder habit. 2. Edith married and had four sons, three of whom exhibited the hemorrhagic tendency in infancy, which continued throughout life, Mordecai dying of hemorrhage of stomach at 40, George from the same cause at 20, and Davis from hemorrhage after venesection. All the family suffered from rheumatism, but there is no history of gout or tuberculosis.

The essential elements of hæmophilia are a hereditary and congenital hemorrhagic diathesis associated with a tendency to swelling of the joints. Dr. J. Wickham Legg (*St. Bartholomew's Hospital Reports*, 1881, p. 328) says that the word hæmophilia is both stupid and barbarous. But it is infinitely better than hemorrhagic diathesis, as he admits, and in the absence of a better word may as well be retained. Its use should be restricted to the congenital and hereditary disease, and not applied to the temporary hemorrhagic diathesis seen in certain diseases, *e. g.*, scurvy, purpura hæmorrhagica, etc. The French call it "Hemophylie;" the Germans "Hämophilie," or "Bluterkrankheit," and a sufferer from the affection "Bluter," a translation of our word bleeder. The word bleeder was first employed by Otto (*New York Med. Repos.*, 1803, vol. vi. p. 3). Little was it thought at the time (in early part of sixteenth century) Prof. Alexander Benedictus gave an account of a Venetian barber that picked his nose and died of hemorrhage from the wound inflicted, that he was dealing with a disease that would baffle the profession for centuries. The history of the affection must be brief, as it has not long been recognized as a distinct disease. Dr. Legg, in his *Treatise on Hæmophilia*, in 1872 (to which frequent reference will be made in this paper), refers to a disease described in the writings of Albucasis, an Arabian author, who lived at Cordova in the eleventh or twelfth century. He relates that in a certain village there were those who, when wounded or phlebotomized, suffered uncontrollable hemorrhages which generally ended in death. He further relates that the same accident happened when the boys rubbed their gums, and that hemorrhage was a common cause of death. This is the first account of the disease—and is a

<sup>1</sup> I think Dr. Coates refers to the same case in *North Amer. Med. and Surg. Journal*, vol. vi. p. 45, 1828.

fair portrait of it. During the interval between this and the rediscovery of the disease by Fordyce in 1784 (*Fragmenta*, p. 46), modern research has failed to discover any mention of it in the Greek, Latin, and Arabic writings. As Grandidier has suggested, this must be regarded a fortunate circumstance, for had it been known in the times of witchcraft and the persecutions following it, the victims of hæmophilia would have suffered the dangerous consequences of such a delusion. Prof. Virehow has called attention to a case described in the writings of Höehstetter (1627), a boy who bled from the umbilicus at birth, and was subject to attacks of epistaxis, from which he died at an early age (quoted by Legg). In 1794, Dr. E. H. Smith, of New York, described a boy who always bled a few days previous to the anniversary of his birth, and the hemorrhage invariably ceased on his birthday. He died of hemorrhage three days previous to fifth birthday. In 1820, Nasse (*Hörn's Archiv*, quoted by Immermann) collected a number of cases, and attempted the first scientific description of the disease. A few years later Schönlein proposed a name for the disease, and studied its pathology. He related it to cyanosis and a malformation of the heart. In 1849 Wachsmuth collected a number of cases and published his *Die Bluterkrankheit*. In 1855 Grandidier published his *Die Hämophilie*, which has contributed so much to our knowledge of the malady. To this he supplemented a paper in 1863, another in 1872, and his last in 1879. Dr. Legg published his exhaustive *Treatise on Hæmophilia* in 1872 and Immermann in 1874. These articles, with the cases recorded from time to time in the medical journals, comprise the literature of the subject.

Sex is an important predisposing cause of hæmophilia. In the earliest accounts of the affection it was thought that males only were subject to it, but this assumption has not been verified by statistical research. Females, however, are much less subject to the disease, and seldom present cases that are typical. In the cases recorded in this paper it manifested itself in eleven females, three of which have terminated fatally, and in several others not considered bleeders the joint phenomena have existed more or less throughout their lives. Lange (quoted by Legg) in 1845 collected 260 cases, of which 31 were females. Grandidier's compilation in 1872 included 631 cases, Immermann has added 19 to this list, making 650 cases, 48 of which were females. Since 1874, from the cases recorded in medical literature with those included in this paper, I have collected 120 cases, and of this number 15 were females. This swells the number to 780 cases, 717 males to 63 females, a ratio of 11 to 1. In no other disease is the predisposing influence of sex so marked. The danger to life is much less in woman. Grandidier (loc. cit.) reports 16 deaths in females, making with those herein recorded and other cases from medical journals not included in his report, 23. Wachsmuth (loc. cit.) records the death of a lady from hemorrhage caused by the rupture

of the hymen. According to Legg (loc. cit.) the affection in women confines itself to spontaneous hemorrhages, prolonged and profuse menstruations, floodings at delivery and at the change of life. In no case have I been able to get a history of flooding at delivery in a bleeder, nor has menstruation been excessive.

Many theories have, from time to time, been proposed to account for hæmophilia, but an hereditary disposition appears the best established cause. Nasse (loc. cit.) relates that in 98 families that he has collected, there was a disposition to bleed in parents, grandparents, or cousins in 52. In 20 of the remaining the parents enjoyed good health, while 26 families suffered from gout, serofula, syphilis, rheumatism, lung or heart disease. Dr. Legg has suggested that hereditation as a cause may exist oftener than appears. When all or nearly all the boys of a family are bleeders, an hereditary disposition is a more rational explanation than its generation *de novo*. Among the poor it is difficult to get a history further back than parents, rarely grandparents, and the affection frequently skips a generation or two, reappearing with its original severity. In the so-called rheumatic families it is very probable the disease has expressed itself in the affection of the joints as in several cases previously described. With the exception of Dr. Legg, Grandidier, and a few others, I think sufficient importance has not been attached to the joint trouble, it being regarded as a rheumatic coincidence or a complication of the disease, rather than a prominent feature.

Some authors advocate a common ancestry for all bleeders, while others ascribe the disease to intermarriage of relatives. In support of the latter opinion its apparent frequency among Germans and Jews has been urged, such intermarriages being more frequent among these. As to Germany furnishing a majority of cases, the explanation has been offered that the attention of the profession was first called to it there by Schönlein, Nasse, Wachsmuth, Grandidier, and others, and a greater interest has been taken and more cases reported in Great Britain since the publication of Dr. Legg's work. The following facts show that its distribution is principally among the Anglo-Germanic races. Out of 219 families Germany furnishes 94; Great Britain 52; North America 23; France 22; Prussia and Poland 10; Switzerland 9; and the remainder by other European countries. An attempt has been made to relate the disease to an anomalous form of gout, but in 50 cases of gout in St. Bartholomew's Hospital under the care of Dr. Legg only three suffered with even hæmorrhoids, and no trace of the gouty diathesis has existed in the families I have investigated. The emotions have marked influence over the tissues, and hemorrhage has frequently followed fear and rage especially in women. Dr. M. Huss, of Stockholm (*Archiv Gen. from Central*. 1856), reports the case of a servant girl (a hæmophilist) who could produce hemorrhagic sweating by entering into a dispute. André (quoted by Legg) gives an

account of a woman during her third pregnancy that saw her maid bleed from a frightful scalp wound. She soon gave birth to a daughter who died of hemorrhage of the scalp and fingers when ten weeks old. She afterwards gave birth to two sons who died of hemorrhage about the same age. Grandidier quotes a case from Mutzenbecher of a woman who while suckling her child was assaulted by some French soldiers. She was greatly frightened and fainted, and before recovering from the shock nursed her child. It soon showed signs of a hemorrhagic tendency. The mother subsequently gave birth to two boys who were bleeders. But here the emotion may have simply excited a latent bleeder predisposition. The female members of bleeder families are *par excellence* conductors of the disposition. The daughters in bleeder families are comparatively exempt from the tendency, while the sons are liable to it. They may themselves be healthy and marry healthy husbands, yet the bleeder habit is likely to be conducted to their sons. The daughter of a bleeder family, herself a bleeder, is no more likely to transmit the tendency than her non-bleeder sister. A son of a bleeder family, himself a bleeder, should he live to beget children, does not often conduct the disease to his children but to his grandsons through his daughters. Again, should he have non-bleeder brothers, their grandsons seldom bleed. The number of generations through which hæmophilia can be transmitted is unknown, but there is evidence for the belief, that when it once appears in a family it never completely disappears. Hay describes a family in which it was well-marked for a period of 95 years. Legg (St. Bartholomew's Hosp. Reports, 1881, vol. lxxvii. p. 328) exhibits a family tree where it has existed for nearly 200 years. Grandidier has a family in which he thinks the tendency is disappearing. Members of bleeder families not subject to the disease themselves usually enjoy good health and do not die prematurely. The descent through the males is not peculiar to hæmophilia, as it has been pointed out in Duchenne's paralysis and diabetes insipidus. Dr. Gee has recorded a family history in which thirst descended through four generations. The great-grandfather suffered of thirst all his life, as also did his brother. The unaffected daughter transmitted it to her son, and the affected one to her grandsons through a daughter. I have a parallel case in which the tendency to supernumerary digits has descended through four generations, and Dr. Bodell has a family tree in which colour blindness had a similar descent. Wachsmuth has called attention to the great fertility of bleeders. In 12 families there were 120 children. In the C. family of this paper there were 13 children, 7 of whom were bleeders while one son and the five daughters escaped. Dr. Legg thinks in families where all the boys are not victims of the disease the first born are less liable to bleed; this has been my observation in five families.

Modern research has failed to discover characteristic anatomical conditions to account for hæmophilia, yet there are certain peculiarities that

occur with some degree of constancy. Blagden (*Med. Chir. Trans.*, 1817, p. 217) calls attention to the thinness and transparency of the arteries. Legg noted nothing but the thinness of the vascular walls; the vessels were also empty. The superficial vessels, according to Immermann, are large in proportion to the size of the great vessels. Mr. Winters (*Dublin Med. Jour.*, Sept. 1880) found also the large vessels coming from the heart relatively small. Mr. James Wilson (*Lectures on Blood*, London, 1819, p. 412) has noticed a similar condition, and that arteries were inelastic, and resembled veins. Some writers associate the phenomena of hæmophilia with congenital malformation of the heart. Were it a constant post-mortem condition, and all cases of malformation of the heart hæmophilists, it might be entitled to more consideration; but it is accidental and exceptional. In some cases fatty degeneration of the muscular fibres of the heart has been observed (Virchow and others). Dr. Kidd (*Med. Times and Gaz.*, May, 1878) reports great proliferation of endothelial cells in small arteries and veins; diminution and degeneration of muscular coat of arteries, it being indistinct, opaque, and without any definite structure. He calls it a "hydropic degeneration of muscular fibres."

Although many theories have been proposed for the peculiarly interesting phenomena of hæmophilia, none of them are entirely satisfactory. It seems folly to associate this disease, as has been done, with cyanosis, morbus maculosus, and kindred affections in which there is a hemorrhagic tendency; for their acquired and transitory nature excludes them from the congenital and habitual disease under consideration. Is its nature due to the condition of the vascular system, the variation in volume or quality of the blood, or to the disturbed innervation of the capillaries? The condition of the vessels with inelastic walls, the diminution of the muscular coat, and relative increase in the number and lumen of small vessels, would favor superficial congestions, which, in connection with hypertrophy and excited action of the heart, frequently observed in hæmophilists, would partially explain spontaneous hemorrhages. This condition of the vascular system would also throw some light on the obstinacy of traumatic hemorrhages, for the inelasticity and defective muscular coat would interfere with the contraction of small vessels, and thus the arrest of the flow of blood. As to the quality of the blood, it has been argued on purely theoretical grounds that a disturbance in the fibrin factors would interfere with its coagulability, and thus with the formation of thrombi in the wounded vessels, which unquestionably perform an important part in checking hemorrhage. But nearly all observers agree that the blood of hæmophilists clots firmly and quickly; and the results of careful analyses by different observers have failed to support such an hypothesis. With a variation in the volume of blood the superficial vessels would be distended, and congestions and spontaneous hemorrhages favored. In support of

this view we have the almost constant prodromic symptom, plethora—a hypertrophy of the blood. Of this, however, positive proof is impracticable and even impossible; for we have no exact knowledge of the amount of blood in health, and if we did we could not determine accurately the amount after death in the vessels, much less the previous loss. Bleeders seem to make blood rapidly, as it has long been noticed they quickly recover from formidable hemorrhages.

The hypothesis of disturbed innervation in the production of hemorrhage has many adherents. It supposes by a disturbance of nerve power the tonicity of the vessels is lost, blood is invited to the small vessels, and those which naturally admit only the fluid portions of the blood now admit the corpuscles, which force their way through the weakened walls—hence hemorrhage; and the difficulty in arresting it consists in the want of contractility, due to disturbed innervation. The hypothesis is supported by the variation in the disposition to bleed at different times, and the powerful influence the emotions—as fear and rage—have in precipitating hemorrhage in those in whom the affection exists. In summary, it may be said, in the present state of our knowledge, that the three elements—accounting for the most of the phenomena of hæmophilia are: (1) alterations in the bloodvessel walls; (2) variations in the volume of blood; and (3) disturbed innervation of the vessels. These, in the pathogenesis, may act conjointly.

The swelling of the joints, according to Dubois (*Gaz. Med. de Paris*, 1838, p. 43), is due to extravasation of blood into the connective tissue surrounding the joints and their synovial cavities. Later authorities (Reinert, Assman, Paget, and others) confirm his observations. The symptoms of hæmophilia generally appear between birth and second dentition—rarely after the 25th year. Grandidier found out of 65 boys 62 showed signs of the disease before the 10th year, appearing in 48 the first year. In the cases I have reported above, 34 began to bleed before the 8th year, while 2 after the 8th, and several are uncertain. The joint trouble may begin at any time in life. Old observers ascribed great importance to color of eyes, hair, etc., claiming that blonds were preëminently affected. It can be seen that such a view is not supported by reference to the cases herein reported. However, bleeders generally have thin, transparent skin, and prominent superficial veins. Some writers speak of unusual display of intellectual power in bleeder children.

Three forms of the disease have been pointed out: 1. The aggravated form, in which there is a tendency to severe, spontaneous, traumatic, and interstitial hemorrhages, associated with swelling of the joints. This form, seldom seen in females, generally lasts through life, and usually is the cause of death. 2. The intermediate has no tendency to the joint affection or traumatic hemorrhages, but frequent spontaneous ones from mucous surfaces and subcutaneous ecchymoses. This form frequently dis-

appears at puberty. The third form is lowest in degree and seen only in females, which manifests itself in ecchymoses, and in early and prolonged menstruation. Certain conditions seem to aggravate and excite the tendency. Among which there may be mentioned fear, rage, and depressing emotions; cold and damp, and sudden climatic changes; seasons of the year, especially autumn and spring, and hard drinking.

The prodromic symptoms of spontaneous hemorrhage are plethora, ruby lips, hot skin, full, rapid, and often bounding pulse; sometimes dyspnœa, febrile urine, and constipation. Under subjective signs there may be mentioned headache, restlessness, giddiness, tinnitus aurium, darting pains in limbs, and increase in sexual appetite. Pain in lumbar region often precedes hæmaturia, in bowels, melæna, and in nose, an attack of epistaxis. In children there have been noticeable liveliness, bursts of laughter, fits of crying, epileptiform convulsions, and acuteness of sight and hearing. The prodromata disappear when bleeding begins. In children hemorrhage is most common from nose, tongue, and gums; after puberty, next in order bowels, bladder, kidney, stomach, lungs. The quantity of blood varies from a few drops to sufficient to imperil life. The duration is equally variable.

The bleeding may be intermittent or continuous to exhaustion and death. Hemorrhages arising from injuries and operations are in no way in proportion to the extent of the wound. Slight scratches, pricks of pins, leech bites, division of frænum linguæ, scarification for vaccination and cupping, extraction of teeth have often led to frightful and even fatal hemorrhages. Mr. Durlam (*American Journal of the Medical Sciences*) reports a death in a bleeder boy  $3\frac{1}{2}$  years old after lithotomy, but there are comparatively few deaths recorded following major operations. Wachsmuth gives the proportion of deaths from wounds of blunt and sharp instruments as 5 to 1. Bleeders vary at different times in their susceptibility to hemorrhage. Abscesses when opened often bleed alarmingly, and sloughs are apt to form and protract the healing. The nature of the hemorrhage is generally capillary; an oozing, whether of idiopathic or traumatic origin. The duration may vary from a few hours to several days, and there may be frequent intermissions before it subsides or the fatal issue is reached. When the condition of plethora is relieved the face is pale, and skin blanched; the pulse is small, feeble, rapid and often irregular; blood murmurs, delirium, and unconsciousness follow, and life may terminate in convulsions. In favourable cases the patient is greatly exhausted and usually sinks into a heavy prolonged sleep. The condition is that of anæmia from the loss of an enormous quantity of blood. Dr. Pepper (*Phila. Med. Times*, Nov. 19, 1881) in an ænemie bleeder found that there was an absolute reduction of 50 per cent. (2,660,000 to cubic millimetre) of red corpuscles of the blood and one white to five hundred

and thirty red. Assmann<sup>1</sup> (*Die Hämophilie*, 1869) finds an absolute increase of red corpuscles, the relative proportion of white and red being as much as 1 to 1500. In Dr. Pepper's case the man at the time was almost bloodless from repeated profuse hemorrhages. Assman's observations may have been made in the plethoric state which precedes a hemorrhage, and the results may not be at variance so much as they seem.

The capricious appetite of chlorosis is sometimes present, the patient craving for clay, lime, etc. Petechiæ, ecchymoses, and vibices are often the first manifestation. They may be submucous, subcutaneous, or interstitial. They can often be referred to slight blows and pressure. They vary in size from a pin's head to that of the hand, and display a red, purple, or bluish-black colour, and are not uncommonly the only evidence of the disease. The interstitial hemorrhage is usually grave, terminating in an abscess and often extensive sloughing. The swelling of the joints is often troublesome and may be the only manifestation. This has led the laity and many old practitioners to call the affection the "hemorrhagic and rheumatic habit." The following is the order of frequency with which the joints are affected: knee, hip, elbow, ankle, wrist. They are swollen, tender to the touch, and there is often effusion into the synovial cavity; motion produces pain; redness is generally absent; the temperature elevated. In spring and autumn they are usually worse. Pains in the limbs may be associated with or alternate the swelling.

The *diagnosis* of hæmophilia is not often difficult in men. However, there are uncertain cases, especially in women. When an individual has suffered from violent habitual bleedings in childhood, associated with swelling of the joints and the family habit, it can unquestionably be pronounced hæmophilia. Caution is required in the second form unless an hereditary taint can be discovered. The absence of obstinate hemorrhage from trifling wounds renders the diagnosis doubtful. Bleeding of the nose in boys is common, but if associated with bleeding from other places a low type may be anticipated. The temporary hemorrhagic diathesis so often seen in women can be distinguished by its non-appearance before puberty, the absence of a predisposing influence, and its non-appearance in their sons. Again, it should be distinguished from umbilical hemorrhage in the new-born, for it is rare for children of a hemorrhagic family to bleed from the umbilicus. The transitory and acquired nature of scurvy and purpura hæmorrhagica is sufficient to separate them from hæmophilia. It is not an accident, it is a "structural vice" (*vitium primæ formationis*), and not generated *de novo* by habits or food as suggested by Dr. Hopkins (*Pacific Med. and Surg. Journ.* 1880, p. 55).

Grandidier says "it is the most hereditary of all diseases." In 213 families 631 were affected, with the 120 cases which I have collected

<sup>1</sup> Finger (Schmidt's Jahr.) obtained similar results.



occurring in 37 families, and Immermann's 19 uninclosed cases in 6 families, making 780 cases occurring in 246 families, or an average of more than three bleeders to a family.

In *prognosis* age is an important factor. While it is exceptional for the first hemorrhage to prove fatal, yet in childhood, especially in boys, the prognosis is grave. Long continued oozing from lacerated wounds, profuse epistaxis, intestinal hemorrhage, and hæmaturia are very unfavourable. Grandidier (loc. cit.) has compiled 212 cases of deaths from hæmophilia, 197 of which are males and 15 females. The table shows the excessive mortality of bleeder children between birth and the eighth year.

	Males.	Females.	Total.
Within the first year . . . .	22	7	29
From 1 to 7 years . . . .	89	3	92
“ 8 to 14 “ . . . .	39	1	40
“ 15 to 21 “ . . . .	24	3	27
“ 22 to 28 “ . . . .	8		8
“ 29 to 35 “ . . . .	6	1	7
“ 36 to 45 “ . . . .	3		3
Over 50 “ . . . .	6		6

Of the deaths related in this paper, 9 occurred before the eighth year, while the entire mortality after that period is 7. In exceptional cases death has resulted from intercurrent disease during the active period. It has been repeatedly pointed out that the tendency decreases or becomes latent with age. In the rudimentary forms of the affection the prognosis is more favourable. Besides age and form of hemorrhage, the constitution and locality of the injury should be considered. Hemorrhages from injuries about the face, scalp, gums, or tongue are formidable ones.

The life of a bleeder is certainly not an enviable one, associated as it is with the horror of losing the last ounce of blood at a moment's warning. The most judicious care, the most regular habits, and the best surgical skill afford little protection to that essential element of life, whose course has been almost predestined to be turned from its natural channels. A breath, a move, or even a thought may precipitate the fatal issue.

The *treatment* of hæmophilia is unsatisfactory and unsuccessful. It has been often observed hæmophilists bleed in no way in proportion to the extent of the wound. It seems that all operations involving the knife are unjustifiable where the disease is known to exist. At least all the resources of conservative surgery should be exhausted before a resort to any surgical operation. Bleeders meeting with injuries should be treated actively from the first. Space will permit me to mention but a few of the most important measures that have been employed under such circumstances to arrest hemorrhage. Cold has been employed successfully by running a stream of ice water on the bleeding part, and when the bleeding is from mouth, nose, or rectum, lumps of ice may be introduced. Caution should be exercised in its continuous use, as there have

been instances in which it has been followed by extensive sloughing. Very little benefit can be expected from *position*, as the hemorrhage is usually capillary. The prolonged use of *hot water* has been found efficient in controlling hemorrhage. Primarily it produces relaxation of tissues and may momentarily increase the hemorrhage, but its secondary effect is to induce contraction, a familiar example of which is a washerwoman's hand. I am not aware of its having been tried in hæmophilists, but its efficacy in arresting ordinary bleeding, and its safety recommend it where other agents fail.

Judicious *pressure* is an invaluable means, and a sponge or lint (previously compressed) is of service in plugging bleeding cavities. Pressure may be applied by a graduated compress held by a few turns of a roller bandage. It must be borne in mind that pressure in bleeders is very liable to be followed by ecchymoses and subsequent sloughing. *Styptics* in connection with moderate pressure have been advantageously employed. As to hæmostatics, in many cases the resources of the pharmacopœia have been exhausted without the slightest benefit. Of the numerous ones that have been used, there may be mentioned nitrate of silver, alum, benzoic acid, the perchloride and persulphate of iron. The actual cautery, though not unattended by danger of a return of hemorrhage when the slough separates, has often been an efficient agent where styptics and pressure have failed. To arrest bleeding from an alveolus, it has been recommended to plug with lint-saturated with Monsel's solution after thorough cauterization. Ranger (St. Thomas Hosp. Reports, vol. vi. p. 121) in the hemorrhage of bleeders after extraction of teeth advises an impression of plaster Paris with salt and warm water to be taken of mouth, the jaw to be held in position by a compress and bandage. Before taking it the mouth should be thoroughly cleansed of blood.

*Spontaneous hemorrhages* are frequently difficult to treat on account of the inaccessibility of the bleeding point. It is a mooted question whether treatment should be undertaken at once or the hemorrhage be allowed to exercise a derivative influence. If plethora and congestion are prodromata of bleeding in these cases, it is possible that checking it prematurely will do more harm than good. Numerous writers have held this view (Wachsmuth, Stromeyer, Legg, and others). It is claimed palpitation, dyspnœa, and apoplectic symptoms may arise from too early an attempt to arrest it. On the same principle Dr. Frier (*Lancet*, 1880, p. 556) advocates venesection. On the other hand, Assmann and Reinert maintain this form should be met with the same energy as hemorrhage of traumatic origin. For attacks of epistaxis, tannic acid, alum, and various other astringents have been successfully employed. I have known pieces of ice firmly held to either side of the nose to arrest it when other measures had failed. Plugging the nasal cavities, in skilful hands, has been often resorted to with good results. The internal or subcutaneous admin-

istration of ergot, opium, and gallic acid has controlled it when all local means had failed, and is especially indicated where local applications are inadmissible, *e. g.*, hæmaturia and melæna. In hæmoptysis, astringents by atomization are of service. Ice to the spine has been efficient in hæmaturia. But there are numerous cases recorded where every resource of the skilful physician and surgeon has been employed without the slightest benefit. Mr. Lane (*Lancet*, 1840, p. 186) employed transfusion in a bleeder boy of ten years of age with good results. Remedies to increase the plasticity of the blood have been used with asserted success, but, as remarked by Dr. Legg, they were not used until the patient was almost bloodless, and it is doubtful whether they checked the hemorrhage or it was the natural termination.

The *prophylaxis* involves a very important question—the marriage of members belonging to bleeder families. The marriage of daughters who have bleeder brothers is certainly unjustifiable, whether they have themselves the tendency or not. The same objection may be urged against a male bleeder marrying, although his children are less liable to bleed than those of his non-bleeder sisters, but the disposition is sure to break out in his grandsons through his daughters. In non-bleeder males who have brothers that bleed there is much less danger of transmitting the tendency either in the active or latent form. All alcoholic stimulants should be prohibited in the intervals of hemorrhages, and, where prodromata exist, a saline aperient is said to be efficient in preventing an attack. Otto (*New York Med. Repos.*, 1803) had surprising results from the free use of sulphate of soda, while Fordyce (*loc. cit.*) recommends sulphate of magnesia. Drs. Legg and Heath have derived benefit from the use of the perchloride of iron during the interval, claiming the spontaneous hemorrhages were less frequent and more easily controlled. Dr. Harkins (*British Medical Journal*, 1881) has had similar results from the use of chlorate of potash. Plenty of fresh air and sunshine are beneficial during the intervals of hemorrhage. Cold and damp and all excitement should be avoided. The treatment of the affection of the joints has consisted of the ordinary surgical measures. Warm and cold applications are recommended, whichever may be found most grateful to the patient. Pain should be relieved by anodyne applications. To remove the effusion, counter-irritation should be cautiously employed, and tincture of iodine painted above and below the joint is a useful and safe measure. Blisters should be cautiously used, for, as heretofore stated, they have been followed by extensive sloughing and alarming hemorrhage. Plaster-of-Paris dressing and firm bandaging have been found useful in some cases.

The following comprises all the literature of the subject by American physicians that I have been able to find:—

Otto, *New York Medical Repository*, 1803, vol. vi. E. H. Smith, *Phila. Medical Museum*, 1805, vol. i. p. 284. Hay, *New England Journal of Medicine and Surgery*,

1813, vol. ii. p. 213. *W. S. Buel*, Transactions of the Physico-Medical Society of New York, 1817, p. 305. *Reynell Coates*, Phila. North American Medical and Surgical Journal, 1828, vol. vi. p. 45. *Hughes*, Kentucky, Transylvania Journal of Medicine, 1831, vol. v. p. 123; *Dr. Hughes* in American Journal Medical Sciences, February, 1833. *E. Woodward*, Boston Medical and Surgical Journal, 1833. *Gould*, Boston Medical and Surgical Journal, 1833. *Bowditch*,<sup>1</sup> American Journal Medical Sciences, 1850, No. 37. *Trantus*, St. Louis Medical and Surgical Journal, 1870, vol. vii. *Harris*, Phila. Medical Times, 1872, vol. ii. *Chase*, Phila. Medical and Surgical Reporter, December, 1873. *Holton*, American Journal Medical Sciences, 1874, p. 414. *Whittaker*, Cincinnati Lancet and Clinic, 1880, p. 263. *Morton*<sup>1</sup> (*T. G.*), American Journal Medical Sciences, 1880, p. 188. *Hopkins*, Pacific Medical and Surgical Journal, 1880-1, p. 55. *Pepper*, Phila. Medical Times, November, 1881.

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#### ARTICLE V.

#### THE ADVANTAGES OF A DRY LOCAL TREATMENT IN OTORRHOËAL DISEASES.

By CHARLES H. BURNETT, M.D., Consulting Aurist to the Pennsylvania Institution for the Deaf and Dumb; Aurist to the Presbyterian Hospital, Philadelphia.

ONE of the greatest hindrances to cure in an ear disease accompanied by otorrhœa, whether the disease be due to inflammation in the auditory canal or middle ear, is the presence of granulations and polypoid growths. Yet one of the oldest forms of treatment of otorrhœal disease has been by copious syringing and instillation of various fluid medicines. Hence, in such treatment of this class of aural diseases, moisture has been repeatedly applied to, and kept in the ear, a naturally heated locality. Now as heat and moisture tend to promote granulations and keep up a discharge, it has become very apparent to aurists that a moist treatment of otorrhœa in many instances has a tendency to keep up rather than to check the morbid discharge from the ear.

Cleanliness in a running ear must, of course, be maintained by judicious syringing with tepid water in copious discharges, and in cases of slight otorrhœa, the ear can be kept clean without syringing by the use of a swab of absorbent cotton on the cotton holder, or by absorbent cotton rolled into a long slender dossil, and gently inserted into the ear. A copious discharge may be defined as one which overflows the auditory canal, fills the concha, and runs on the cheek. A slight one just fills the canal as far as the meatus at most, or at least, only keeps the membrana tympani moist. In the worst cases of otorrhœa I have long since ceased to let the patient or his friends syringe the running ear, if he can be seen every day or two by his physician, and let the latter perform this important operation. After syringing, the surgeon should dry the ear with absorbent cotton on

<sup>1</sup> Reports that I have not myself consulted,

the cotton-holder, applied under illumination of the ear by the forehead mirror. If the patient must be entrusted with cleansing his ear at home, it must be done by absorbent cotton and *not with the syringe*. By following these general rules, it will be seen that a great deal of moisture once entering into the cleansing part of the treatment of aurial discharge may be eliminated. Perhaps in one case in a hundred the patient's ear must be syringed at home, but not in a greater ratio of cases will the necessity arise.

Respecting the local medication of the diseased ear much may be said. Formerly a patient with otorrhœa, regardless of its cause, was directed, in addition to using the syringe several times a day, to put drops of various astringent solutions into his ear. The patient usually syringed his ear, or had it syringed, three or four times daily, and afterwards from five to ten drops of the astringent solutions were put into the meatus and allowed to find their way to the depths of the ear. This method, in many cases, seemed to do no harm, but to effect a cure, after a rather lengthy treatment, if no granulations sprang up, and if the fluid applications were skilfully diminished as the discharge decreased. If, however, at the first signs of decrease in the morbid discharge, the quantity of fluid treatment was not lessened, and this lessening was not kept up *pari passu* with the cessation of the discharge, the writer has often observed, as it were, a steady increase in otorrhœa after a short but marked abatement. In other words, this kind of treatment after a longer or a shorter time may cease to act as a curative and begin to be a positive irritant, and hence to maintain the morbid secretion. Then too in the case of zinc drops there seems to be supplied something which makes the fundus of the auditory canal favourable to the growth of the ear-fungus, the aspergillus. Zinc solutions, as prepared for the ear, certainly favour the growth of a fungus, looking something like aspergillus, at the bottom of the bottles containing them, very soon after they are brought from the shops, and in this may be found the explanation of their sometimes apparent fungus-fostering action in aurial disease.

The syringe, therefore, and all forms of drops should be omitted from the home treatment by the patient in cases of otorrhœa. The most the patient should be directed to do is to dry his ear according to its need, by running into the canal and down to the fundus a twisted pencil of absorbent cotton, and, in the writer's experience, none is equal in its absorbent power to that made by Hance Brothers & White, of Philadelphia. The patient in the case of copious discharge should see his physician every day at first, then every other day, and so on at longer intervals as the discharge diminishes. The surgeon is to use the syringe only when it is absolutely necessary to remove by it the matter from the ear, and thus prepare the organ for the application of medication by his hand. This latter part of the treatment should consist in the blowing of powders into

the ear. Powdered alum has long been used by aurists, but this is the only powder which has entered to any extent into aural therapeutics in the books. It has been used only because of its astringency and not because it was a powder. It is, happily, universally condemned at present, and I trust has fallen into entire disuse, on account of its tendency to bring about furuncles in the ear. Powders as the great treatment, the dry treatment *par excellence*, have gradually come into use in the treatment of aural diseases characterized by discharge from the meatus, since Bezold, of Munich, recommended the use of boracic acid in powdered form for treating otorrhœa. In this country Sexton in New York, Theobald in Baltimore, and Todd and Spencer in St. Louis, have been among the earliest to give prominence to this method of treating otorrhœa, and to abandon the excessive use of the syringe.

These observers have used in powder, boracic acid and borax chiefly, perfectly soluble powders; and no other kind should be introduced into the auditory canal.

Todd prefers in most cases powdered borax. Sexton has recommended a formula for boracic acid powder, which seems to me a highly useful one. I refer to that which is prepared by triturating equal parts of tincture of *Calendula officinalis* with boracic acid (gr. to minim), allowing evaporation, then rubbing one part of the thus calendulated boracic acid with one or two parts of pure boracic acid. In my experience this latter powder possesses unusual advantages as a healer of the discharge. Other powders possess also undoubted advantages, as for example one composed of—

Resorcin, ʒj.

Boracic acid, ʒj.

and also one which I have lately introduced to the notice of my colleagues composed of—

Salicylate of chinoline, ʒss-ʒj.

Boracic acid, ʒj.

or the chinoline salicylate, an amorphous white powder, may be used pure. It is, however, likely to burn and cause pain when used in the latter state. In most cases it must be used mixed with sixteen times its quantity of boracic acid before it can be endured in the ear. But its power of destroying bacteria is so great as to render it a most valuable aid in the treatment of purulent diseases of the ear, and in inflammation of the canal from the growth of *aspergillus*, for it kills the latter most promptly. In fact the excellence which all the powders named possess as healers of aural inflammation and discharge, while partially due to their drying and detergent qualities, is greatly augmented by their antiseptic nature. All powders should be blown gently into the ear by means of a very simple instrument, which the surgeon can make for himself. Take a foot of black rubber tubing, for this kind is more flexible and durable than white,

and to one end attach a goose-quill tooth pick, after the point is cut off. This will serve to take up the powder and carry it to the ear funnel. The ear funnel should be first adjusted, and the ear viewed by the light reflected from the aurist's forehead mirror having a focal distance of eight inches. Then under this good illumination the quill end of the blow-tube, in which a little of the medicating powder, whatever it may be, should have been taken up, may be inserted into the ear funnel, or speculum as it is usually called. The quill must be held as one does a pen, aim can readily be taken at the diseased spot, and a gentle puff from the surgeon's mouth, in which the proximal end of the rubber tube is held, will send the powder over the diseased surface. This method of insufflation of powders into the ear is shown in the accompanying figure.



This is such a simple and perfectly efficient operation that the wonder is that it has not been sooner and more widely in use. It is still more amazing that the practicability of this manœuvre has been questioned, and that it has been recommended to resort to a clumsy and almost impracticable method of pouring and ramming the powder into the meatus and down the auditory canal, a method attended surely with loss of time and usually with failure. If persevered in with any roughness—and it can hardly fail to abrade and bruise the ear in any case—it will be followed by more or less acute inflammation of the canal.

The practical curative advantages of the treatment by means of insufflation of powders, over the treatment of otorrhœa by syringing and “drops” may be seen best by comparing the tables of in all forty-five cases. The first fifteen cases show the results of the old method, the other two sets, fifteen cases each, show the advantages of the new or dry method of

treatment by means of powders blown into the auditory canal. These have been taken arbitrarily from my note-book of *consecutive* cases.

TABLE I.—*Fifteen consecutive cases of Otorrhœa, as treated ten years ago by the "moist" method, i. e., by syringing and "drops," showing the great disadvantages of such treatment as compared with the dry or antiseptic method now more in vogue. Compare with Table II.*

			Days.	Result.
Case 1.	Woman, 30 years old, chronic.	1st period of treatment,	30	Cured.
	Relapsed in six months.	2d " " "	330	Not cured.
Case 2.	Man, 30 years old, chronic.	1st " " "	54	Improved.
	Relapsed in one month.	2d " " "	73	Not cured.
Case 3.	Woman, 26 years old, chronic, both ears.	Under treatment,	120	Cured.
Case 4.	Girl, 13 years old, chronic.	Under treatment,	103	"
Case 5.	Girl, 18 years old, chronic.	1st period of treatment,	59	"
	Relapsed in four months by accidental entrance of cold water into ear.	2d period of treatment,	365	"
Case 6.	Man, 25 years old, chronic.	Under treatment,	207	Improved.
Case 7.	Woman, 40 years old, chronic, both ears.	Under treatment,	116	Cured.
	Has relapsed several times in ten years, with heavy colds in head. Last relapse treated by "dry" method, and recovered rapidly.			
Case 8.	Man, 28 years old, chronic.	Under treatment,	195	Not cured.
Case 9.	Man, 17 years old, chronic.	1st period of treatment,	38	Cured.
	In a year took cold and relapsed (mastoid symptoms)	2d period of treatment,	145	"
	" " " " "	3d " " "	61	"
	" " " " "	4th " " "	175	"
Case 10.	Man, 22 years old, chronic.	Under treatment,	30	Not cured.
Case 11.	Man, 18 years old, chronic.	" "	365	Improved.
Case 12.	Man, 30 years old, acute.	" "	17	Cured.
Case 13.	Girl, 19 years old, chronic.	" "	610	Improved.
Case 14.	Boy, 10 years old, chronic.	" "	44	"
Case 15.	Boy, 8 years old, chronic, both ears.	Under treatment,	45	Cured.
			3182	
Average duration of treatment of a case by the old method,			212 days.	

TABLE II.—*Fifteen consecutive cases of Otorrhœa, treated by the "dry method," within the last six months, showing great advantages of the "dry" over the "moist" treatment.*

			Days.	Result.
Case 1.	Girl, 17 years old, subacute.	Under treatment,	15	Cured.
Case 2.	Girl, 4 " " chronic.	" "	1	"
Case 3.	Man, 38 " " "	" "	10	"
Case 4.	Boy, 10 " " subacute.	" "	4	"
Case 5.	Woman, 21 " " chronic.	" "	10	"
Case 6.	Woman, 45 " " "	" "	20	"
Case 7.	Boy, 3 " " "	" "	31	"
Case 8.	Woman, 27 " " "	" "	28	"
Case 9.	Boy, 10 " " "	" "	21	"
Case 10.	Girl, 4 " " "	" "	22	"
(This case had a short relapse of a week, but was cured in two applications of boracic acid in powder.)				
Case 11.	Woman, 30 years old, chronic.	Under treatment,	4	Cured.
Case 12.	Man, 22 " " "	" "	66	Much improved.
Case 13.	Boy, 17 " " "	" "	13	Cured.
Case 14.	Man, 46 " " " (both ears)	" "	15	"
Case 15.	Woman, 35 " " "	" "	7	"
			267	
Average duration of treatment of a case by this method,			17 to 18 days.	



This gives for an individual, in Table I., a treatment lasting 212 days, or, if estimated by occasions or periods, one lasting 151 days.

It may be urged that not enough time has yet elapsed to permit of seeing whether the cases in Table II. will relapse, as many did under the old treatment as shown in Table I. This may be a valid objection; however, Table II. shows very plainly that a cure can be brought about in a very much shorter time than it ever was by the method depicted in Table I., and also that even when a relapse does occur in Table II. the second cure is more speedily effected than by the old methods of Table I.

The durability of a cure under the new method may be better seen in Table III., in which all the cases preceede chronologically those in Table II. So far the cases in Table III. have held good.

TABLE III.—*Fifteen consecutive cases of chronic Otorrhœa, preceeding those in Table II., but treated also by the dry method, showing the less liability to relapse after this treatment.*

		Days.	Result.
Case 1.	Womau, 47 yrs., chronic 43 yrs. Under treatment,	24	Cured.
Case 2.	Boy, 9 yrs. (a mute), chr. 5 yrs. " "	90	Improved.
Case 3.	" 10 " " 10 yrs. " "	90	"
Case 4.	Girl, 18 years, chronic 14 yrs. " "	31	Cured.
Case 5.	Girl, 5 years, acute " "	23	"
Case 6.	Girl, 7 years, chronic 5 yrs. " "	60	"
Case 7.	Man, 25 yrs. (both ears), chr. 3 yrs. " "	3	Withdrew impr'd.
Case 8.	Boy, 17 years, chronic 1 year " "	39	Cured.
Case 9.	Woman (negress) 30 years (granulations) acute. Under treatment,	7	Cured.
Case 10.	Man, 55 years, chronic 4 years. " "	6	"
Case 11.	Woman, 35 yrs., duration not known (granulations) Under treatment,	7	Much improved.
Case 12.	Man, 72 years, chronic 70 years (granulations) Under treatment,	26	Cured.
	Short relapse in six months " "	2	"
Case 13.	Woman, 50 years, chronic since childhood. In this case the treatment had to contend with general cachexia, furunculosis meatus, dental caries, insanity in family, and <i>res angustæ domi</i> in a sensitive organization.	73	
Case 14.	Woman, 55 yrs., chronic one month (granulations) Under treatment,	15	Cured.
Case 15.	Man, 38 years, chronic otitis externa at drum membrane, with polyp. Under treatment,	20	"
		516	
Average duration of treatment of a case by this method,		34 to 35 days.	

This average is greatly increased by 180 days devoted to the treatment of the two mutes, Cases 2 and 3. But they must be counted in, as they enter the consecutive series.

*Synopsis of Table.*

	Table I. Old treatment.	Table II. New treatment.	Table III. New treatment.
Male . . . . .	9	7	7
Female . . . . .	6	8	8
Average age of patients in years . . . . .	22	21 <sup>3</sup> / <sub>8</sub>	32
Average duration of treatment in days . . . . .	212	17-18	35 <sup>1</sup>
Improved . . . . .	2	1	4 <sup>2</sup>
Failures . . . . .	3	0	0
Cures . . . . .	10	14	11
Relapses . . . . .	5	1 <sup>3</sup>	2 <sup>4</sup>

## ARTICLE VI.

SOME OBSERVATIONS ON THE ANTISEPTIC AND PHYSIOLOGICAL ACTION OF RESORCIN. By W. B. PLATT, M.D. (Harv.), M.R.C.S. (Eng.), Baltimore, Md.

RESORCIN was discovered by Hlasiwitsch and Barth, in Vienna, in 1864. They obtained it from galbanum and ammoniac, two well-known gum resins. It has also been obtained from Brazil-wood, but is now usually made by melting phenol-sulphonic acid with caustic potassa. In America it costs about \$2.50 per ounce; in Germany, half that sum. Any increased consumption would doubtless largely reduce the market price, as it is at present made only on a small scale.

*Chemically.*—Resorcin belongs to the phenol group, phenol (carbolic acid) being  $C_6H_5(OH)$ , while resorcin is  $C_6H_4(OH)_2$ . It is isomeric with two other members of the same group, hydrochinon (which is already known to possess antiseptic qualities) and pyrocatechin. The latter has been little studied as yet.

*Hydrochinon*, quite similar in its general action to resorcin, is reported to have been investigated by Brieger, who finds it possesses a stronger antipyretic action than resorcin. Two decigrammes internally (0.2) depress the temperature of the body half a degree Cent. (nearly  $1\frac{1}{2}^{\circ}$  F.). The effect in depressing temperature is very brief. Larger doses, up to 1 gramme, cause symptoms of excitement, etc., similar to resorcin. It has no more local irritant action than water.

<sup>1</sup> This average is increased by the 180 days devoted to the two mutes before referred to.

<sup>2</sup> The two mutes under this head may yet come among the failures.

<sup>3</sup> Finally cured, and counted in cures.

<sup>4</sup> Finally cured, and counted in cures. One was a woman, 50 years old, already alluded to as a very chronic and cachectic case; the other was a man, 72 years old, in whom the disease was chronic since boyhood, and in whom the disease was complicated by polypi. The relapse, however, only lasted a few days.

*Resorcin.*—Within the last few years attention has been called to the *antiseptic* action of resorcin, especially with reference to the question of its substitution for carbolic acid. Dr. J. Andeer, of Würzburg, as reported in the *Lancet*, Nov. 13, 1881, thinks a "1 per cent. solution of resorcin retards fermentation, a stronger solution arrests it, destroys movement of infusoria and low organisms. He finds a 1 per cent. solution prevents putrefaction in blood, urine," etc. I shall endeavour to show that the antiseptic power of resorcin is much less than that of carbolic acid or alcohol, as far as its effect upon bacteria or the prevention of putrefaction may denote.

*Therapeutically.*—Resorcin has been employed internally and locally for the most diverse affections. Dr. J. Andeer<sup>1</sup> has used it extensively in acute and chronic cystitis, in which he claims for it an almost specific curative power. He reports "156 cases where, either by him or to his personal knowledge, it was injected into the human bladder, with the best results, in vesical catarrh. Acute cases have been entirely cured by the injection of a 5 per cent. solution of resorcin. In 1871 he injected 5 grammes into his own bladder." It has also been used as a local application in various diseases of the skin, caused or accompanied by low organisms, with alleged curative effect, and as an injection in gonorrhœa.

Andeer recommends a 1–2 per cent. solution as a spray for surgical purposes, and a 1–5 per cent. aq. solution for use internally. In Prof. B. von Langenbeck's clinic in Berlin, it has been used more or less since 1878 as an antiseptic to replace carbolic acid, with the best results, and with freedom from toxic effects when applied to wounds, etc. Resorcin catgut has also been employed by various surgeons recently as a ligature for arteries.

Lichtheim, as quoted in the *Lancet*, Nov. 13, 1881, finds that resorcin, in doses of 2–3 grammes in solution, causes giddiness, tinnitus, flushing of face, acceleration of pulse, and respiration. In ten or fifteen minutes patients begin to perspire freely; with the sweating, the primary stimulating effect passes off, and the pyrexia (in fever patients) subsides. An hour after the resorcin had been administered, the pulse and respiration were normal, and the diaphoresis had ceased. The depression of temperature in some cases amounted to 3° C. (= 5.4° F.), and the fall in the pulse-rate to  $\frac{1}{3}$ . Pneumonia and erysipelas were influenced less as to lowering of temperature than typhoid fever, and severe cases of the latter less than mild ones. The antipyretic effect was of briefer duration than that of salicylic acid or quinine. In three hours the temperature usually rose again, often with a rigor. The dose may be repeated without injury to the patient. As a rule little excitement is produced, but occasionally delirium and tremor. The urine, after its administration, becomes brownish-black

<sup>1</sup> Centralblatt für die Med. Wissenschaft., Sept. 3, 1881.

on exposure to air, and with hydrochloric acid and heat a dark-brown precipitate may result. Resorein has apparently no specific effect in pneumonia, erysipelas, or typhoid fever. In acute rheumatism it has no influence on the joint affection. In intermittent fever it has a specific action comparable to that of quinine.

Soltmann is reported to have employed it in 91 cases of "cholera infantum," of which 74 recovered. He thinks it reduces the mortality of that disease from 34 per cent. to 15 per cent., arresting vomiting and restraining the diarrhoea. He gives it to children under one year old in doses of 0.1–0.3 ( $1\frac{1}{2}$  grains to 5 grains) in 60 c. c. chamomile tea.

Dujardin Beaumetz reports resorein poisonous in doses of more than 6 grammes (93 grains).

J. Andeer (*Lancet*, Nov. 13, 1881) believes that sublimed resorein is much less poisonous. He says it has a slightly caustic action on the mucous membrane, not causing a slough, and that the epithelium is regenerated in two to three days. He advises its use in chronic gastric catarrh, to wash out the stomach when dilatation is present. He also believes it to possess hæmostatic properties.

In the *Physician and Surgeon* (U. S.), April 1, 1882, a case of poisoning is reported where a woman of nineteen, who had been taking resorein in doses of one to one and a half drachms, experienced from a dose of two drachms vertigo, formication, loss of consciousness, and depression of temperature to 35° C., but by use of the stomach-pump was out of danger in two hours. The resorein had been employed in this case for the relief of spasmodic asthma. Resorein causes an increased elimination of sulphur, probably by the breaking up of sulphur compounds in the body. Resorein is eliminated by the kidneys (J. Andeer, *Centralblatt für die Med. Wissenschaft.*, Dec. 17, 1881) largely as such, but also as ethereal resorein sulphate of potassium. The so-called "resorein-blue" is obtained by heating portions of the viscera from animals poisoned by hypodermic injections of resorein, and collecting the sublimate. It is said to be identical with the colouring-matter obtained from the urine of typhus and cholera patients.

According to Fittig (*Organische Chemie*, p. 340) resorein crystallizes in tables or columns, melts at 104° C., boils at 271° C., but evaporates at a lower temperature. It is very soluble in water, alcohol, and ether.

The resorein used in the following experiments was obtained from Alfred Reichardt (N. Y.) as "pure resorein;" melted at 104–106° C., and contained 1 per cent. of water, as kindly determined by Mr C. J. Bell in the Chemical Laboratory of the Johns Hopkins University. It may therefore be assumed to be practically pure.

Unless otherwise especially stated, the baccilli urinæ, the ordinary bacteria seen in the urine of alkaline fermentation, are meant by the word "bacteria."

The vessels, glass rods, etc., were kept scrupulously clean during the examination. The latter, as well as the glass slides and cover glasses for microscopical examinations, were first cleaned and wiped; then passed through a gas-flame immediately before use to destroy any adherent bacteria. In experiments 1 and 2 a power of 220 diameters, in the succeeding ones of 550 diameters, was employed.

*SERIES A.—Experiment concerning Action of Resorcin upon Serum of Ox-Blood.*

*Expt. 1.*—*March 6*, at 4.40 P. M. The serum from ox-blood obtained from the animal this morning was filtered through animal charcoal, after which it appears pale red, almost transparent, showing under the microscope no bacteria, only a few red blood-corpuscles. Of this, 20 e. c. (5.3 fluidrachms) were placed in a clean wineglass just washed with boiling distilled water. 1 e. c. of a 5 per cent. sol. (aqueous) of resorcin (= 0.050 gram. =  $\frac{3}{4}$  grain) was added. The glass with its contents was next placed in an incubating closet, covered, and kept at a temperature of 33°–35° Centigrade. This was labelled “1.”

*Expt. 1<sup>a</sup>.*—11 e. c. (about 3 drachms) of serum in a wineglass without addition of resorcin was subjected to the same conditions otherwise, placed in the incubator along with the resorcin-serum, and labelled “1<sup>a</sup>.”

*Expt. 1.* Serum with resorcin.—*March 7*, 3.45 P. M. After 23 hours. Temp. 35° C. Clear, pale red. A few white flakes adherent to sides of glass. A very slight sediment. Reaction faintly alkaline; odour fragrant. Rarely bacteria are seen. These are *not* in motion.

*8th*, 12.40 P. M. After 44 hours. Temp. 35° C. Fluid dark red or smoky; otherwise same as last. A few motionless bacteria present.

*9th*, 3.45 P. M. After 71 hours. Temp. 35° C. Upper layer of serum dark olive-green; fluid opaque. Reaction alkaline. *Moving organisms present.*

*Expt. 1<sup>a</sup>.* Serum without resorcin.—*March 7*, 3.45 P. M. After 23 hours. Temp. 35° C. Turbid; redder than No. 1; otherwise the same, excepting that numerous rod-shaped, moving bacteria are *present*.

*Conclusion.*— $\frac{3}{4}$  (.050) grain of resorcin retards the active development of bacteria in 5 drachms (20 e. c.) of ox-blood serum at least 21 hours.

*SERIES B.—Concerning Antiseptic Action of Resorcin and Carbolic Acid upon Normal Urine originally free from Bacteria.*

*Expt. 2.*—*March 6*, 1882, 5.15 P. M. Recently passed normal urine, faintly acid, transparent, and having as a sediment only an occasional epithelial scale or minute foreign body, is employed. Entire absence of bacteria large enough to be seen with a power of 220 diam. (Zeiss obj. D, ocular No. 2). In each of three wineglasses, labelled 2<sup>1</sup>, 2<sup>2</sup>, 2<sup>3</sup>, is placed 20 e. c. of urine. To each glass 1 e. c. of the resorcin 5 per cent. sol. is added. They are placed in the hot closet and maintained at 30°–35° C., mostly 34° C. (each glass covered with a ground-glass plate). Two glasses labelled 2<sup>a</sup> and 2<sup>b</sup> containing each 20 e. c. of urine, without addition of resorcin, subjected to the same conditions, and likewise placed in hot closet.

*7th*, 11.20 A. M. After 18 hours, two of the glasses containing urine with resorcin, viz., 2<sup>2</sup> and 2<sup>3</sup>, contain a few bacteria in motion. Urine appears otherwise normal. Urine alone, 2<sup>a</sup> and 2<sup>b</sup>, without resorcin, is strongly alkaline, pale, has an iridescent pellicle, contains crystals of triple phosphate, and many moving bacteria.

*11th.* After 6 days, 2<sup>3</sup> has become opaque, very black (almost like ink), strongly alkaline.

*Conclusion.*—0.050 (=  $\frac{3}{4}$  grain) of resorcin has a very slight influence in retarding development of bacteria in 20 e. c. of urine, for a time, within 18 hours.

*Expt. 3.*—*March 7, 1882, 4.30 P. M.* Clear, yellow, freshly passed, slightly acid urine, free from bacteria, was employed. 20 c. c. of this is placed in each of three wineglasses which contain 2 c. c. each of a 5 per cent. aqueous solution of resorcin. These are labelled respectively 3<sup>1</sup>, 3<sup>2</sup>, and 3<sup>3</sup>. 20 c. c. of same urine without resorcin placed in a marked glass, and about 40 c. c. of urine placed in a flask stopped with cotton. All the above 5 glasses placed in hot-air closet where the temperature is kept by a self-regulating gas-jet at 33°–35° C.

8th, 10.30 A. M. Temp. of closet 35.0° C. The marked glass and the flask containing *urine alone* examined, eighteen hours after beginning of experiment.

Urine in *marked glass*.—Turbid. A white precipitate in apex of wineglass. Reaction strongly alkaline. Strong urinous odour. An iridescent pellicle on surface of urine. Rod-shaped, beaded bacteria, in motion, *present*.

Urine in *flask*.—Turbid; white precipitate in bottom. Reaction strongly alkaline. Strong urinous odour. Iridescent pellicle upon surface of fluid. Rod-shaped, beaded bacteria, in motion, *present*.

*March 7, 4.30 P. M., 3<sup>1</sup>.* 20 c. c. of clear, yellow, acid, fresh urine free from bacteria, to which is added 2 c. c. (0.100 resorcin) of a 5 per cent. aqueous solution of resorcin.

8th, 4.45 P. M. After 24¼ hours. Temp. 34° C. 3<sup>1</sup>. Perfectly clear; reaction neutral or faintly alkaline; no sediment. *No bacteria*.

9th, 3.45 P. M. After 47¼ hours. 3<sup>1</sup>. A very slight commencing turbidity. Reaction neutral. *Bacteria* (beaded) *present and in motion* (bacteria have Pasteur's aureole well marked). Bacteria having been found after 47¼ hours, the specimen was examined as to the reaction *March 10th and 11th*, the latter at 3.45 P. M., thus after about 96 hours, when it is *still acid*. At 12 noon, *March 12th*, after 120 hours, the reaction *found alkaline*.

*March 7, 4.30 P. M., 3<sup>2</sup>.* 20 c. c. of clear, yellow, fresh, faintly acid urine, free from bacteria, was employed. To this is added 2 c. c. of a 5 per cent. sol. of resorcin (= 0.100 resorcin). Same as 3<sup>1</sup>.

8th, 4.45 P. M. After 24¼ hours. Temp. 34° C. 3<sup>2</sup>. Clear. Reaction neutral or slightly alkaline. A very few motionless bacteria present.

9th, 3.45 P. M. After 47¼ hours. Temp. 34° C. Slight commencing turbidity. Reaction faintly *alkaline*. Odour as of stale urine. *Bacteria present in motion*.

10th. Reaction acid. 11th. Acid. 12th. Neutral. 13th. Neutral. Up to 27th. Clear.

*March 7, 4.30 P. M., 3<sup>3</sup>.* 20 c. c. of clear, yellow, freshly passed, faintly acid urine, free from bacteria, was employed. To this is added 2 c. c. of a 5 per cent. sol. of resorcin = 0.100 resorcin. Same as 3<sup>1</sup> and 3<sup>2</sup>.

8th, 4.45 P. M. After 24¼ hours. Temp. 34° C. 3<sup>3</sup>. Clear. Normal. *No bacteria*.

9th, 3.45 P. M. After 47¼ hours. Temp. 34° C. 3<sup>3</sup>. Contains *bacteria in motion*.

10th, 11.05 A. M. After 31½ hours. Temp. 34° C. 3<sup>3</sup>. Clear. Acid. A very slight deposit in glass (phosphates).

11th. Reaction acid.

12th, 11.05 A. M. After 4 days 19 hours. Reaction alkaline.

*Expt. 4.*—*March 9, 4.30 P. M.* Freshly passed urine is filtered and boiled, 4 drops of hydrochloric acid added to dissolve the phosphates separating.

5.30 P. M. Divided into 8 portions of 20 c. c. each, placed in wineglasses as follows:—

No. 4. Urine alone. No addition.

No. 4<sup>1</sup>. “ “

5, 5<sup>1</sup>, 5<sup>2</sup>. 3 c. c. of a 5 per cent. solution of resorcin added to each.

6, 6<sup>1</sup>, 6<sup>2</sup>. 1 c. c. of a 5 per cent. solution of crystallized carbolic acid added to each. (Calvert's No. 1.)

All the above are put in the hot-air closet and kept at temperature of 32°–34° C.

*March 10, 1882, 11.05 A. M.* Thermometer at 34° C. 17½ hours after experiment began. No. 4. Urine clear, yellow, acid, no precipitate. No bacteria.

11th, 3.45 P. M. After 46 hours from commencement of experiment. Thermometer  $35^{\circ}$  C. Clear, transparent, acid, no ppt. No bacteria.

12th, 11.05 A. M. After  $65\frac{1}{2}$  hours. Commencing dimness of urine. Reaction slightly acid. Odour about normal. *Plenty of bacteria*, beaded, moving (2-, 4-, 6-celled).

13th, 10.50 A. M. Thermometer  $34^{\circ}$  C. After  $89\frac{1}{4}$  hours. Paler. Slightly turbid. A slight white ppt. in apex of glass; flaky ppt. on sides of glass. Odour stale urinous. Reaction faintly acid.

14th, 3.20 P. M. Thermometer at  $35^{\circ}$  C. Same as last, excepting a slight film has formed on surface. ( $117\frac{3}{4}$  hours.)

15th, 4.10 P. M. After about 6 days. Turbid. Reaction acid, pale yellow.

Urine No. 4<sup>1</sup>.—March 10, 11.05 A. M. Thermometer at  $34^{\circ}$  C. After  $17\frac{1}{2}$  hours. Apparently perfectly normal. No bacteria.

11th, 3.45 P. M. Thermometer  $35^{\circ}$  C. After 46 hours. Commencing dimness of fluid; slight ppt.; reaction acid; very rarely a moving organism seen.

12th, 11.05 A. M. After  $65\frac{1}{2}$  hours. Same as before, except reaction neutral, and moving, beaded *bacteria* are present.

13th, 10.50 A. M. Thermometer  $34^{\circ}$  C. After  $89\frac{1}{4}$  hours. Paler, slightly turbid; white ppt., stale odour; reaction faintly acid. Bacteria as before.

14th, 3.20 P. M. Thermometer  $35^{\circ}$  C. After  $117\frac{3}{4}$  hours. Somewhat more turbid; a film forming on surface, as in No. 4.

15th, 4.10 P. M. After about 6 days. Clearer; reaction acid; a precipitate on bottom and sides of the glass.

Expt. No. 5.—20 c. c. urine containing 0.150 gramme of resorcin (3 c. c. of sol.).

March 10, 11.05 A. M. Thermometer  $34^{\circ}$  C. After  $17\frac{1}{2}$  hours. Fluid clear; reaction acid. *No bacteria*.

11th, 5 P. M. Thermometer  $35^{\circ}$  C. After  $47\frac{1}{2}$  hours. Clear flakiness on sides of glass; faintly acid. *No bacteria*.

12th, 12 noon. After  $66\frac{1}{2}$  hours. Clear; a very slight ppt.; reaction neutral. *No bacteria*.

13th, 12.55 P. M. Thermometer  $34^{\circ}$  C. After 92 hours. Reaction acid; colour yellow, clear. *No bacteria*. Crystals of oxalate of lime seen.

14th, 3.20 P. M. Thermometer  $35^{\circ}$  C. After  $117\frac{3}{4}$  hours. Same as last note.

15th, 4.10 P. M. After about 6 days. Same as last note.

6th, 8.35 P. M. After about 7 days. Same as last note. Still no bacteria.

17th, 11.30 P. M. Thermometer  $33^{\circ}$ . After about 8 days. Same as last. Reaction still acid. In addition a very few distinct rod-shaped, *motionless bacteria* are seen.

18th, 10.30 A. M. After 9 days and 17 hours. Clear, darker in colour than yesterday; reaction acid. *No bacteria*, but a few large motionless double cells are seen. Oxalate of lime crystals as before.

20th, 10.35 A. M. Temperature  $26^{\circ}$ . After 10 days and 17 hours. Same as last note, only a few minute oval moving organisms are seen.

21st, 3.30 P. M. Temperature  $35^{\circ}$ . After about 11 days. Same as last note. No beaded bacteria now seen; other organisms rarely seen.

27th, 3.45 P. M. Temperature  $34^{\circ}$  C. After 18 days. Clear, red, yellow, acid. Same as last, except no further examination for bacteria. A slight flaky film on surface.

5<sup>1</sup> (20 c. c. of urine containing 3 c. c. of a 5 per cent. resorcin solution = 0.150 gramme).

March 10, 11.05 A. M. Thermometer  $34^{\circ}$  C. After  $17\frac{1}{2}$  hours. Same as No. 5. *No bacteria*.

12th, 12 noon. After  $66\frac{1}{2}$  hours. Same as No. 5, except reaction slightly acid. *No bacteria*.

13th, 4 P. M. Thermometer  $34^{\circ}$  C. After 3 days  $22\frac{1}{2}$  hours ( $94\frac{1}{2}$ ). Clear, acid, crystals of oxalate of lime seen. *No bacteria*.

14th, 3.20 P. M. After  $117\frac{3}{4}$  hours. Thermometer  $35^{\circ}$  C. Same as before, only a few motionless bacteria seen.

15th, 4.10 P. M. About 6 days since experiment began. Urine still clear, yellow, acid. No moving bacteria seen.

16th, 3.35 P. M. Thermometer  $36^{\circ}$ . After about 7 days. Same as last note.

17th, 11.30 A. M. Thermometer  $33^{\circ}$ . After 7 days 18 hours. Same as last note.

18th, 10.30 A. M. After 8 days 17 hours. Clear yellow, but darker than before. Reaction acid; a large gelatinous mass has formed in the urine. *Many bacteria in motion* seen.

20th, 10.35 A. M. Thermometer  $26^{\circ}$ . After about 11 days. Clear; colour, orange-red; slight cloud in bottom of glass. Not examined further for bacteria.

27th, 3.45 P. M. Thermometer  $34^{\circ}$ . After about 18 days. Reaction acid; colour of Port wine, otherwise as last note.

5<sup>2</sup>. 20 c. e. of urine to which was added (Mar. 9th) 3 c. e. 5 per cent. resorcin sol. = 0.150 gramme resorcin.

March 10, 11.05 A. M. Thermometer  $34^{\circ}$ . After  $17\frac{1}{2}$  hours. Same as 5<sup>1</sup>. No bacteria.

12th, 12 noon. After  $66\frac{1}{2}$  hours. Clear, slightly acid, normal.

13th, 4 P. M. About 4 days after beginning of experiment. Clear, acid, crystals of oxalate of lime. A very few *motionless* bacteria seen.

14th, 3.20 P. M. Temperature  $35^{\circ}$  C. After  $117\frac{3}{4}$  hours. Clear, yellow, acid. No bacteria seen. Oxalate of lime crystals.

15th, 4.10 P. M. About 6 days after experiment began. Clear, yellow; a cloud-like growth in bottom of glass; a tree-like fungus (species not identified) floating in fluid; reaction slightly acid. No bacteria seen. A few large, spherical, granular, nucleated cells seen.

16th, 3.35 P. M. Thermometer  $30^{\circ}$  C. About 7 days after beginning of observations. Clear, dark, reddish-brown, acid. The mould on surface is now brownish-black, with white fringe. No bacteria seen.

17th, 11.30 A. M. Temperature  $33^{\circ}$ . After 7 days 19 hours. Same as yesterday, only mould increasing rapidly in diameter. A few motionless beaded bacteria seen.

18th. Acid.

20th. Acid; numerous moving organisms, not the typical bacteria of urine; oxalate of lime crystals; uric acid crystals.

23d, 10.30 A. M. After 14 days. Reaction alkaline; bacteria seen March 13th (after 4 days), *motionless*; other moving organisms seen March 18th, after 9 days.

Expt. 6 (20 c. e. of urine + 1 c. e. of a 5 per cent. sol. of crystallized carbolic acid = 0.050 carbolic acid).—March 10, 1882, 11.05 A. M. Thermometer  $34^{\circ}$  C. After  $17\frac{1}{2}$  hours. Clear, acid, no ppt. No bacteria.

11th, 3.45 P. M. Temp.  $35^{\circ}$ . After 46 hours. Clear, acid, slightly flaky ppt. on sides of glass. No bacteria.

12th, 11.05 A. M. After  $65\frac{1}{2}$  hours. Clear, slightly acid, a slight deposit, crystals of calcic oxalate present. No bacteria.

13th, 10.50 A. M. Temp.  $34^{\circ}$  C. After  $89\frac{1}{4}$  hours. Clear, yellow. Same as last note.

14th, 3.20 P. M. Temp.  $35^{\circ}$ . After  $117\frac{1}{4}$  hours. Same as last note. Perhaps crystals of oxalate of lime increased.

15th, 4.10 P. M. After about 6 days. Same as last note. No bacteria.

16th, 3.35 P. M. Temp.  $36^{\circ}$ . After about 7 days. Same as at last note. No bacteria.

17th, 11.30 A. M. Temp.  $33^{\circ}$ . After about 8 days. Still same as last note.

18th, 11.10 A. M. After about 9 days. Same as last, except fine flakes floating in fluid

20th, 10.35 A. M. Temp.  $26^{\circ}$ . After 10 days, 17 hours. Same as last note.

21st, 23d, 27th. Same as last note. *No bacteria*.

28th. Gross appearances still the same.

29th, 4.15 P. M. After 20 days. Clear; reaction acid; light brown, flaky deposit on sides of glass resembling ppt. of urates. *Bacteria present* in motion.

No. 6<sup>1</sup> (20 c. e. of boiled, filtered, acidulated urine plus 1 c. e. of a 5 per cent. solution of crystallized carbolic acid).—March 9, 5.30 P. M. Same as No. 6.



10th. Same as No. 6. No bacteria. An occasional iridescent flake seen on surface of the solution.

12th. Clear, acid.

13th, 4 P. M. Temp.  $34^{\circ}$  C. After 3 days  $22\frac{1}{2}$  hours. Clear, slightly acid. No bacteria. Many crystals of calcic oxalate.

14th. Same as last note.

15th. Same as last. No bacteria.

16th. Still unchanged since last note.

21st. Same as last.

23d. Same as last.

25th. Removed from hot air-closet, exposed to ordinary temperature of laboratory (about  $70^{\circ}$  F.).

27th. After 18 days. *Moving organisms seen*, but not the usual bacillus. Reaction acid.

28th. Same as last.

29th. After 20 days. Numerous large rod-shaped moving bacteria seen (not the ordinary beaded bacteria of stale urine). Reaction still acid.

6<sup>2</sup>. 20 c. c. of freshly passed filtered or boiled urine, to which four drops of hydrochloric acid has been added to dissolve the precipitated phosphates. March 9, 4.30 P. M. To this is added (as in 6 and 6<sup>1</sup>) 1 c. c. of a 5 per cent. sol. of crystallized carbolic acid (= 0.050 carbolic acid).

10th, 10.05 A. M. Temp.  $34^{\circ}$  C. No bacteria. Unchanged. Reaction acid.

12th, 12 noon. Clear, faintly acid.

13th, 4 P. M. Temp.  $34^{\circ}$  C. No bacteria. Crystals of calcic oxalate. Reaction faintly acid.

14th, 3.20 P. M. Temp.  $35^{\circ}$  C. No bacteria. Same as last note.

15th, 4.10 P. M. Clear, acid. No bacteria.

16th, 3.35 P. M. Temp.  $36^{\circ}$  C. Same as last note (after 7 days).

21st, 3.30 P. M. Temp.  $35^{\circ}$  C. Clear, yellow, acid; a few specks in fluid; very rarely a *moving organism* is seen (after 12 days).

23d, 10.30 A. M. Clear, yellow, acid. No beaded bacteria seen (ordinary variety). Numerous circular, colourless, motionless cells, half size of red blood-corpuscle. After careful search one or two circular or molecular organisms found with apparent motion (after 14 days). Temp.  $33^{\circ}$  C.

27th, 3.45 P. M. Temp.  $34^{\circ}$  C. Large bacteria, in motion, seen. Not the *B. urinæ*. Evidences of organic life seen after 7-12 days.

### SERIES C.—Concerning action of various Antiseptics upon Bacteria in Urine.

March 14, 3.20 P. M. Urine is taken which has stood in a flask one week, found to contain moving bacteria, and to be alkaline after 19 hours. It contains now plenty of moving bacteria of the ordinary variety. Reaction neutral. A 5 per cent. sol. of resorcin is dropped in from a burette, and frequent examinations made to determine the quantity necessary to cause the motion of the bacteria to cease. 5.15 P. M. To 20 c. c. of the urine  $0.6 + 0.4 + 0.6$  c. c. of the 5 per cent. resorcin sol. added. At the third examination many bacteria are motionless, but still moving bacteria remain. Then 0.4 and 1 c. c. added; motion still persists in some bacteria. 3 c. c. in all were added (= 0.150) of resorcin to 20 c. c. urine.

Expt. 7.—March 15, 1882, 6.00 P. M. To 20 c. c. of boiled and filtered freshly passed urine is added 1.1 c. c. of a 0.1 per cent. solution of *thymol*, and placed in hot-air closet. Amount of *thymol* = to about one milligramme (0.001). About 60 c. c. of the urine without any addition, placed in a flask, marked O, and also put in hot-air closet.

16th, 3.35 P. M. Temp.  $36^{\circ}$  C. After  $21\frac{1}{2}$  hours. Urine in flask O, acid, clear. Many moving, rod-shaped, large, 5-6 celled bacteria present.

16th, 3.35 P. M. Temp.  $36^{\circ}$  C. After  $21\frac{1}{2}$  hours. Slightly dim, reaction neutral, plenty of moving rod-shaped beaded bacteria present. Evidently no appreciable effect from this proportion of *thymol*.

31st, 12.05 A. M. 1 c. c. *thymol* solution (1:1000) added to 1 c. c. urine containing many actively moving typical bacteria. Motion of bacteria almost entirely

ceases, difficult to say whether the motion here is inherent or is caused by currents in the fluid. After 4 hours. Bacteria seen plainly to move. 1 c. c. more added (2 in all) of thymol sol. Bacteria still move. 1 more, 3 in all; bacteria still move. That is three milligrammes of thymol in 1 c. c. urine does not destroy motion of bacteria. To 1 c. c. of bacteria urine, is added 1 c. c. of 95 per cent. *alcohol*. Bacteria disappear almost entirely. The few seen were motionless. To 1 c. c. bacteria urine is added 2 c. c. 95 per cent. *alcohol*. No moving bacteria seen. These last two especially difficult to examine since the *alcohol* evaporates with great rapidity, leaving the solid constituents of the urine on the slide.

*Expt. 8.*—*March 21*, 1882, 3.30 P. M. Temp. 35° C. Urine 6 days old from flask O employed. It is alkaline, contains many 2-celled rod-shaped, typical, moving bacteria. 20 c. c. placed in wineglass, 3 c. c. of 5 per cent. sol. resorcin added. Bacteria still move. 1 more (9 in all), motion persists. More, added up to 6 c. c. Motion ceases (6 c. c. = 0.30 resorcin).

23d, 3.15 P. M. Temp. 40°. Urine from flask O, filtered (8 days old). Reaction alkaline, contains many 2-celled rod-shaped, typical, actively moving bacteria, 20 c. c. of the urine employed. To this 4 c. c. of the resorcin solution added: motion persists: 5 c. c. added. Bacteria nearly all float, vertically and motionless in fluid. The resorcin solution now added in small quantities up to 8 c. c. (= 0.40 resorcin): motion persists in a few bacteria.

24th, 11.45 A. M.—After 20½ hours. The solution last mentioned (20 c. c. urine and .8 c. c. sol. resorcin) is swarming with bacteria in motion. Urine labelled No. 8 containing 6 c. c. of 5 per cent. sol. resorcin in 20 c. c. (alkaline bacteria containing urine), shows now, after 68½ hours, a very *dark-red olive* colour. Appears much like the "carbolic urine after carbolic poisoning."

27th, 3.45 P. M.—The urine after 6 days (c. resorcin), is almost inky-black: perfectly opaque in wineglass.

31st. After ten days. Still almost inky-black. Reaction alkaline: no offensive odour; occasionally a few moving bacteria seen; no sediment.

*May 3d.*—After six weeks, unchanged: odour fragrant: no sediment: colour same as before.

*March 24*, 11.45 A. M.—20 c. c. of urine from flask O. 9 days standing, alkaline, and containing many typical rod-shaped bacteria in motion. 8 c. c. resorcin sol. added (= 0.40 resorcin). The bacteria float for the most part vertically motionless in the fluid. Some still vibrate horizontally: 1 more c. c. added, 1 more c. c. added up to 15 c. c. of resorcin sol. (= 0.75 resorcin). Motion persists in a few bacteria. Urine now stands 4 hours, when all bacteria seen in active motion again; 5 c. c. more resorcin sol. added gradually (20 in all) to 20 c. c. s. urine. Bacteria motionless for most part. A number still vibrate. To one small drop of the bacteria urine from flask O, are added two drops 5 per cent. sol. (crystallized) *carbolic* acid. Some bacteria still retain active motion. To 2 c. c. s. of the bacteria alkaline urine from O, are added 6 c. c. s. resorcin sol. (Three times as much resorcin solution as urine.) Bacteria mostly float vertically motionless. Some still move.

25th. 3.45 P. M. To 2 c. c. bacteria urine from O, ten days old, are added with frequent examinations 12 c. c. s. resorcin 5 per cent. sol. Motion of bacteria persists. Thus 0.60 resorcin does not destroy motion in 2 c. c. s. of bacteria urine ten days old.

28th. A 10 per cent. sol resorcin made (1 gramme to aq. 10). An alkaline filtered urine containing many bacteria used. 2 c. c. s. urine, to this are added by degrees 4 c. c. s. (= 0.40) resorcin of the resorcin sol. Motion of bacteria much slower; the remainder of the 10 c. c. s. added—1 gramme resorcin in all to 2 c. c. s. urine—motion persists in the bacteria. 1 gramme resorcin dissolved in 5 c. c. water; this was added to 1 c. c. bacteria urine; motion of bacteria very slow, but persists. 1 gramme resorcin dissolved in 1 c. c. water; this added to 1 c. c. bacteria urine. By most careful observation a slight vibratile motion detected. Mostly they float motionless vertically. 1 gramme solid resorcin dissolved in 1 c. c. urine (bacteria containing), *faint motion* persists, although fluid crystallizes on sides of glass.

31st. 12.05 A. M. 1 c. c. 5 per cent. carbolic acid solution added to 1 c. c. of urine containing bacteria. The 2-4-celled rod-shaped bacteria continue in mo-

tion, although much less after ten minutes than at first. Still very active. 1 more (2 in all) c. c. of carbolic solution added, mixture smells strongly of carbolic acid. Motion of bacteria almost nil, still it is distinct although slight. 1 more added (3 in all) of carbolic solution to 1 c. c. urine. Slight motion persists in bacteria. (Brownian.)

*Summary.*—From the above experiments, taking the *minimum* time in each series that bacteria developed in 20 c. c. of urine, exposed to favourable conditions, it appears that 0.050 of resorein has no appreciable influence, bacteria developing within eighteen hours.

Twice that quantity (0.103) kept urine free from bacteria twenty-four hours, six hours longer.

While 0.150 deterred their development to four days.

Urine without any addition showing bacteria within eighteen hours.

If urine be *boiled*, organisms are found usually considerably later, forty-six to sixty-five hours.

0.050 gramme of carbolic acid hinders development of other *living organisms* (large enough to be detected by a power of 550 diameters) in boiled urine at least twelve days, bacteria eighteen days, the usual bacillus not developing at all. While 0.150 of *resorein* (about  $2\frac{1}{2}$  grains) hinders development of bacteria four days; one-third that amount of carbolic acid preserves a similar amount of urine free from organic life, under similar conditions, three times as long.

The cause of the olive-black coloration of No. 8 (urine with resorein) was not determined. The same appearance was observed in several other specimens where the amount of resorein was not noted.

Since resorein is one of the phenol series and the above-mentioned coloration is so strikingly similar to that observed in urine of carbolic poisoning, may it not be possible that the urine in carbolic poisoning receives its distinctive olive-black colour after secretion by the kidneys, or while in bladder. In none of the *animals* poisoned by resorein was the urine seen to be coloured as above.

The same bacilli (apparently) seem to have greatly differing power of resistance to action of antiseptics at different ages, and while a few milligrammes of resorein or carbolic acid deter their development, yet when *once formed* three times the quantity of 5 per cent. carbolic acid solution, as compared with the *bacteria* urine, does not entirely destroy their motion; and 1 gramme of *solid resorein* added to 1 c. c. of urine does not entirely destroy motion of the bacillus urine.

While all antiseptics do not destroy motion of bacteria already in existence, they may prevent their increase, and so greatly diminish the bad effects of their presence in the discharge from wounds, etc.

The experiments with thymol in arresting motion of bacteria show it to have proportionally considerable power. Its feeble solubility in water prevents its being used in strong solution.

Alcohol arrests motion of bacteria at once (agrees with exp. of Dr.

Sternberg, *vide* Studies from Biological Laboratory of the Johns Hopkins Univ., April, 1882).

It must not be forgotten that experiments with antiseptics upon bacteria show antiseptic power only in a general way—different species of bacteria and micrococci require widely different fluids and temperatures for their development—temperatures and fluids in which one species thrive may be fatal to another. The same may be true of antiseptics not actually caustic in their nature. The power of resistance to the action of antiseptics, of the *same species* of bacteria, appears to vary with the age of the bacteria if kept in the same fluid. The introduction of one species of bacteria or micrococcus into a fluid seems often to be fatal to the existence of another variety already present. The same fluid at different times showing a regular series of bacteria, each in its turn breaking up some complex organic substance into simpler ones. This done, and their nutriment being thus exhausted, they perish, only to allow of the development of a variety capable of attacking and breaking up remaining organic compounds.

The following experiments were undertaken to determine the amount of resorcin, and the time necessary to produce death in dogs and rabbits of different weights, the cause of death in such cases, and the duration of symptoms in cases where the animals recovered. Also, the physiological action, as far as that could be determined by hypodermic injections, of an aqueous solution of resorcin.

#### SERIES D.

*Expt. 1.*—April 3, at 4 P. M. A small, white, female poodle-dog, weighing 4310 grammes, injected with 2 grammes of resorcin dissolved in 5 grammes of boiled distilled water. Injections made in five places beneath skin of abdomen. 4.07. Dog, until now quiet, begins to tremble, pants, stands uneasily, constantly raising his paws off the floor. Respiration becomes extremely rapid, 105 to the minute. 4.12. Leans against side of glass cage, growls, whines, and howls. Rapid respiration continues. Urinates. 4.15. Staggers; takes water. 4.18. Falls to floor; tries to rise; cannot walk; remains lying against side of cage. No longer whines, etc. Rapid respiration continues. Tail in constant motion. Twitching of legs. 4.22. Rises, arches back, extends legs, tail erect, eyes protrude. 4.23. Crouches, saliva drips from mouth, tries to walk. Respiration as before. 4.24. Crouches constantly, arches back, saliva flows profusely. 4.26. Cannot rise, paws the air constantly, lying on side. 4.28. Respirations 61 to half minute (61 inspirations). Clonic contractions of legs which remain mostly in extension. 4.31. Respiration same. Eyelids unduly retracted. Motion of hind-legs much slower; tetanic extensions of same; motion of fore-legs extremely rapid. 4.34. Animal lies upon side. Very rapid motion of legs as if running. 4.36. Rolls and tumbles about. 4.38. Much slower movement. 4.40. Head thrown far back, mouth wide open. Incessant motion of legs as before. Respiration as before. 4.48. Exact imitation of running movements well executed. Dog still on side as before. 4.51. Running movements less complete. More complete extension than flexion. Legs are thrust further back; fore-paws sometimes move together, again alternately. The animal, lying on right side, moves slowly in a circle. Respiration as before. 5.09. No flow of saliva for some time. Motion of hind-legs incomplete; much extension. 5.18. Respiration becomes irregular, 73 to  $\frac{1}{2}$  minute. Biting motion. 5.20. Respiration stops a

full minute. Struggles increase. Apparent spasm of respiratory muscles. Head now not drawn back. 5.23. Respiration now regular, rapid. 5.25. Hoarse sound on respiratory acts. Pawing motion again constant. More flexion than extension; most complete with fore-paws. 5.31. Respirations 70 to minute, slower; nasal râles. 5.34. Dog still on right side. Left fore-paw 48 flexions per minute. 5.36. Motion of legs much less; now only a constant twitching of all legs. 5.37. Winks constantly. Respirations 64 to half minute. 5.39. Animal quieter. 5.42. Yelps a few times. Rapid opening and closing of jaws. 5.44. Attempts to roll over. Muscular contractions intermittent; depressors of lower jaw spasmodically contract; sometimes all four legs contracted at once. 5.46. Raises head. A tetanic contraction of the extended legs. 5.48. Lies quietly, slowly relaxing. 5.49. Death after one hour and forty-nine minutes. 5.51. Tail, which has been up from beginning, slowly falls.

*Autopsy.*—April 4, 10.20 A. M. 17 hours after death. Rigor mortis marked. Weight 4170 grammes—a loss of 140 grammes since beginning of experiment. At two places on skin of abdomen where injections made are white, slightly elevated spots surrounded by red areola, resembling a recent burn. On right side, near a nipple, where injection made, is a hard lump,  $1\frac{1}{2}$  inches long, adherent to skin. In cornea of left eye a large rectangular opaque area. Just above this, on ocular conjunctiva, a considerable subconjunctival hemorrhage. *Heart.* Right ventricle distended with blood; left ventricle firmly contracted. *Spleen* apparently normal. *Stomach.* 4.10 P. M. On lower aspect, near pylorus, an area of punctiform hemorrhages into submucous coat. On posterior aspect of greater curvature are two subperitoneal hemorrhages, oval in shape, about  $\frac{1}{2}$  inch in long diameter. Lungs float in water. Lower lobes much congested; upper portions pink; crepitate on pressure. Color in general dark. Numerous light areas on surface, elevated, containing air. Liver spotted on surface with oval and round spots (white),  $\frac{1}{4}$ – $\frac{1}{2}$  inch in diameter. Gall-bladder distended with green bile. Kidneys apparently normal. Bladder firmly contracted, containing no urine. Brain. Moderate injection of cerebral vessels in substance of brain. Much injection of vessels of pia mater. Spinal cord. Membranes of cord much injected. Substance of cord not at all. Sections made every half inch.

*Expt. 2.*—April 8, at 4.39 P. M. Female black and tan dog. Weight 4517 grammes. Injected with one gramme of resorcin dissolved in 3 c.c. distilled water. 4.40. Commences gaping and licking jaws; this repeated numerous times. 4.41. Restless, moves about, trembles, lies down and rises almost immediately. 4.42. Sits up and lies down. Continues to lick jaws. Left legs tremble, gait uncertain; leans against cage, with closed eyes. Hind-legs frequently lifted up and put down at once. 4.52. Slightly tremulous, changes position frequently, again lies down with nose between paws. 4.54. Respirations are 22 to the minute. 4.55. Sits quietly. Occasional tremor of head. Tremor of tail marked; also of left hind-leg. Animal sitting. Upper eyelids quiver. Dog leans against the wall, quiet, tends to keep eyes closed. 4.54 P. M. Sits up. 4.55. Holds up right fore-paw high in the air, quivering. Up to 5.07 P. M. Slight twitching and tremor continue. At end of that time twitching almost none. Respirations 14 to the minute. Dog still drowsy. Tail constantly erect. The day following the dog seemed well, and had no further ill effect from the 1 gramme of resorcin.

*Expt. 3.*—A black and tan male dog, weight 4675 grammes, injected at 5.08 P. M., April 10, '82, with 1.5 grammes dissolved in distilled water so that whole amount of solution = 5 grammes. This is injected in 5 places beneath skin of abdomen. The dog urinated copiously while being held. 5.15. Restless. Turns round and round constantly licking jaws; tail curved upwards. Up to 5.24 very restless. 5.24. Picks up feet constantly. 5.29. Same. Seems very unhappy; tremor of hind-legs. 5.30. Back arched as he moves about; holds up left fore-paw high in the air, quivering. 5.34. (Same as preceding dog.) 5.38. Crouches and rises instantly. 5.44. Staggers, tumbles. Steps about constantly. 5.52. Spasms of flexor muscles of tail. 6.14. Tail constantly incurved. Restless; can go about. 6.17. Expt. closed.

11th.—Dog of yesterday seen at 3.20 P. M.; has passed much fecal matter (apparently normal). Has a prolapse of rectum, considerable. Drags hind-legs after him, as if paraplegic; with much difficulty manages to stand. A viscid saliva drips from mouth. Animal passes urine copiously in leaning posture. 3.40. Froths copiously at mouth; lies down as if to sleep; frequent deep inspiration. 5.00. Sits up as if better. Believing dog would recover, I left him. He was seen at 6.12 by Mr. Lee, who kindly observed him until 7.31 P. M. Following said to have occurred, summarized: "6.12. Running movements of legs, dog lying on side. 6.14. Gasps, barks, foams at mouth, eyes glare, jaws snap. 6.14½. Running movements very rapid. 6.17. More violent movements, head thrown back. 6.20. Movements faster or slower, still continue breathing 150 per minute. Expirations take place synchronously with backward movement of fore-legs. Up to 6.36 nearly same with occasional short intermissions. 6.36. Struggles further, a violent spasm, head drawn back at right angles to body, intermittent jerking of limbs. 6.42. Temperature very high, dog does not notice objects placed close to head. Erection of penis. 6.54. Movements almost none. 6.57. Movements almost none, confined almost entirely to fore-legs. 7.02. No movement of limbs. Respiration 144 per minute; gasps. 7.08. Running movements recommence with fore-paws for a few seconds. 7.22. Dog appears almost normal, with slightly rapid respiration. Still does notice noises or objects; greatly exhausted. Animal *now left*."

12th at 6 A. M.—Animal found dead, after at least 26 hours.

*Autopsy.*—April 12, at 11 A. M. Shows right side of heart greatly distended with blood. Left firmly contracted, endocardium stained red. In right auricle a firm gray-yellow fibrinous adherent clot. In lungs wedge-shaped infarctions. Stomach.—Near pylorus, staining red of mucous membrane, large amount of mucus in stomach. Bladder contained about 5 c. c. of greenish, turbid, faintly alkaline, highly albuminous urine, containing many spermatozoa, a number of epithelial and coarsely granular casts and leucocytes. Many oil globules. Brain and cord show nothing abnormal, macroscopically, except distension of cerebral vessels. Liver, spleen, and kidneys nearly normal.

*Expt. 4. May 2*—Black and tan male dog, weight 5610 grammes, receives 2 grammes of resorcin in 8 c. c. water hypodermically at 5.15 P. M. 5.17. Uneasy, trembles, vomits frequently. 5.23. Fell over when trying to stand. 5.25. Twitching begins (of limbs). 5.29. Lifts up right front paw often. 5.39. Snaps with jaws frequently. 5.58. Can stand; twitching continues; conscious and intelligent. The snapping and twitching continued until at least 8.00 P. M. Dog apparently well next day from two grammes of resorcin.

*Expt. No. 5.*—April 5, '82, 3.55 P. M. A full-grown rabbit, male, weight 1935 grammes, injected hypodermically with 0.500 grammes resorcin at 4.54 P. M. 4.57½. Movements of fore-paw. 5. Movements of fore-paw continued. 5.08. *Very rapid respiration.* 5.21. Can stand up on hind-legs. 5.35. With exception of a few twitchings runs well and now normal. None the worse for ½ gramme of resorcin after 41 minutes.

*Expt. No. 6.*—April 13, 4 17 P. M. A female white albino rabbit, weighing 1915 grammes, injected beneath skin of abdomen with 1 gramme of resorcin dissolved in 2 c. c. distilled water. Injected in 3 places, 4.19. Very rapid respiration. 4.25. Some twitchings of limbs, also of neck muscles. 4.27. Some twitchings of abdominal muscles. 4.29. Ears twitch together; trembles. 4.30. Constant and rapid twitchings of legs. 4.38. All symptoms increase. 4.40. Staggers, nearly falls. 4.48. Constant twitching of tail. 4.53. Fore-legs kept extended as rabbit squats down; constant twitching of hind limbs. 5.04. Right hind-leg twitches 40 to a minute. 5.10. Twitchings almost stopped; respirations lower and shallower. 5.13½. Death after 56½ minutes from 1 gramme resorcin.

*Summary.*—Of four dogs, apparently healthy, 2 grammes were *fatal* to one female poodle weighing 4310 grammes (in proportion 1 to 2155), after 1 hour and 49 minutes, but *not fatal* to a small terrier, weighing 5610 grammes (proportion of 1 to 2805). Symptoms continuing at least

three and not more than 17 hours.  $1\frac{1}{2}$  grammes killed a dog, male terrier, weighing 4675 grammes (proportion 1 to 3116.6), after 26 hours and within 37 hours.

One gramme was not fatal to a female terrier weighing 4517 grammes (proportion 1 to 4517), the symptoms passing off mostly in half an hour.

Of two rabbits, 1 gramme caused death in  $56\frac{1}{2}$  minutes in a female albino weighing 1915 grammes (proportion 1 to 1915).

One-half gramme did not cause death in a full-grown male, weighing 1935 grammes (proportion 1 to 3870). The symptoms nearly gone in 41 minutes.

The action of resorein upon these six warm-blooded animals was as follows:—

1. Restlessness and trembling.
2. Rapid respiration very early in both rabbits. Early and very marked after a lethal dose in one dog, later after a lesser, but fatal dose, in another. Not marked after non-lethal doses.
3. Staggering, unsteady gait, loss of co-ordination, especially in hind limbs, present early in all the animals excepting one rabbit where small dose exhibited.
4. Twitching of muscles, especially of hind limbs, constant in all.
5. Clonic contraction of nearly all flexors and extensors of body, more especially of those attached to the pelvis and shoulder.
6. In the animals that died the imitation of the natural running or hopping movements before death, as the animal lay upon its side, was striking.

Experiments upon six frogs, by hypodermic injections of resorein, produced clonic contractions of muscles of extremities, whether the frog was pithed or not. Curarized frogs were affected scarcely at all by resorein given hypodermically. Division of the sciatic nerve or sacral plexus caused quiescence of muscles supplied by the nerve trunks after giving resorein.

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#### ARTICLE VII.

PERIOSTEAL OSTEOID SARCOMA OF HUMERUS; AMPUTATION AT SHOULDER-JOINT; RAPID RECURRENCE; SUBSEQUENT EXCISION OF ENTIRE SCAPULA AND OUTER EXTREMITY OF CLAVICLE; RECOVERY. By W. J. CONKLIN, M.D., Dayton, Ohio; Professor of Diseases of Children in Starling Medical College.

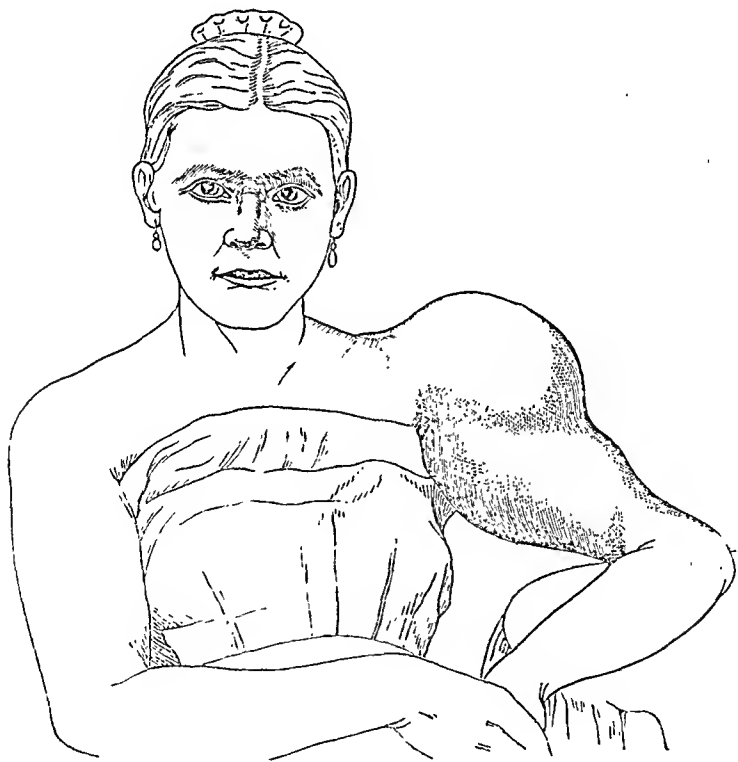
CASE.—Mrs. H., æt. 37, married, consulted me in February, 1880, in regard to a tumour of the left humerus.

The following history was obtained: the growth began, about six years ago, as a small nodule upon the outer side of the arm, just below the inser-

tion of the deltoid. It increased in size very slowly, and caused little inconvenience until she became pregnant, fifteen months ago, since which it has grown rapidly, and is the seat of frequent and very severe paroxysms of pain. The tumour is hard and resisting, excepting in one or two circumscribed spots, in which slight elasticity is detected, distinctly lobed, and involves the greater portion of the shaft of the humerus. An osteoid sarcoma having a periosteal origin, and, therefore, probably malignant, was diagnosticated, and immediate amputation of the arm advised. At this time, it would have been an ordinary shoulder amputation as the upper extremity of the humerus was not implicated in the disease. She, however, refused the operation, and did not again come under my observation until January, 1882.

In the eleven months which had elapsed since the first examination, the tumour had nearly doubled in size, and had extended upward so as to encroach upon and, indeed, project over the humero-scapular articulation. The accompanying engraving, Fig. 1, reproduced from a photograph taken

Fig. 1.



at this time, accurately represents the appearance of the tumour and its relation to the joint. The diseased arm gave a circumference of seventeen inches at the insertion of the deltoid, and nineteen inches and a half on a line with the axilla, while the measurements, at corresponding points on the sound arm, were respectively nine inches and ten inches. The extremity of the acromion process could not be distinctly outlined. The scapula moved freely with the arm, but the motion at the shoulder-joint was very limited, due, as was subsequently ascertained, to two outgrowths



from the under surface of the tumour which impinged upon the neck of the scapula. The patient suffered intensely, and was now eager to submit to any operation. It was proposed to remove the arm at the shoulder-joint, and in case the scapula should be implicated to proceed at once to the removal of all diseased portions. The manner in which the tumour overlapped the joint rendered it impossible to expose the articulation in the usual way. Three plans of procedure suggested themselves: first, using the arm as a lever to dislocate the head of the humerus; second, to chisel through the tumour; and third, to saw off the acromion and thus gain access to the joint.

The operation was made on the 7th of February, 1882, with the assistance of Drs. Reeve, Jewett, Weaver, and Neal. The patient being thoroughly anesthetized, a broad anterior flap extending from the posterior edge of the tumour, behind the axillary border, to the coracoid process was dissected well back over the acromion. Fortunately, strong manipulation of the humerus broke off the projecting processes above mentioned, thus permitting the head of the bone to be thrown out of the glenoid cavity and rendering the completion of the operation in the ordinary manner comparatively easy.

The neck and articulating surface of the scapula were now carefully examined by those present, and pronounced healthy. The patient rallied promptly from the operation and had a rapid and pleasant convalescence. The tumor was examined microscopically by Prof. Frankenberg of Columbus, O., and the diagnosis confirmed.

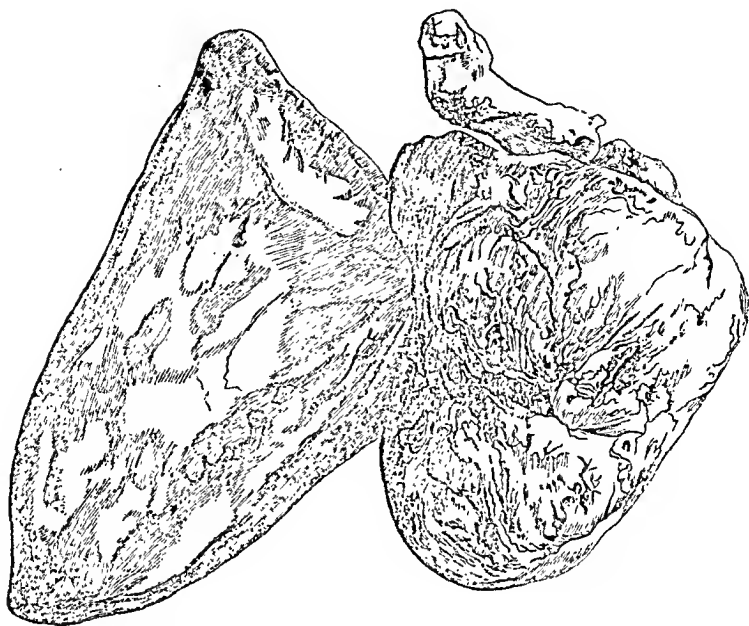
The respite was, however, doomed to be of brief duration. Three months after the operation an examination showed a recurrence of the disease in the scapula. Projecting from and accurately fitting the glenoid cavity was a hard, smooth, globular mass, which rounded out the shoulder with an ominous beauty. The new growth increased in size with frightful rapidity, dipping into the axilla, involving the coracoid process, the external clavicular articulation, and extending along the spine of the scapula, filling up the whole anterior portions of the infra- and supra-spinous fossæ. In less than four months the growth attained the size and relations shown in the accompanying engraving, Fig. 2. The patient now suffered almost continuous pain; and, at times, especially at night, it became so intense as to compel her to walk the floor for hours. She felt that life was not worth having at the price of so much suffering, and earnestly urged that an attempt should be made to give her relief.

After a full and frank statement of all the probabilities she readily agreed to the only operative procedure practicable, *i. e.*, the excision of the entire scapula and a portion of the clavicle. The operation was performed August 30, 1882. Drs. Jewett, Weaver, J. Davis, Dougherty, and C. H. Conklin were present, and rendered efficient assistance.

The operation was begun with an incision over the clavicle, which was at once divided with a metacarpal saw, three inches from the acromial extremity. Turning the patient upon her right side, a horizontal incision was next made from the anterior projection of the tumour along the spine to the posterior border of the scapula.

The incision over the clavicle was then carried down to the inferior angle of the scapula, bisecting the transverse cut near its centre. The skin flaps thus formed were rapidly dissected up and turned aside. The trapezius, rhomboidei, and levator anguli scapulae muscles were next successively divided, freeing the posterior border of the scapula, which was

Fig. 2.



then tilted forwards, the serratus magnus cut, and the subscapularis separated from its anterior attachments. The whole mass was now strongly pulled upward and backward, and the dissection rapidly completed, great care being taken to make the knife hug closely that portion of the tumour which projected anteriorly and into the axilla. In forcibly turning the scapula upon itself, so as to reach the deeper parts more easily, the clavicle was broken off very near its acromial attachment, where the bone was diseased; the removal of this fragment completed this part of the operation. Notwithstanding the care exercised in completing the excision the axillary artery was unfortunately button-holed just above the origin of the subscapular; it was promptly seized and compressed until the dissection was finished. The hemorrhage, although at times quite free, was less than was anticipated. Aside from the axillary artery, ligatures were only applied to the supra-scapular and a muscular branch in the lower part of the wound; two or three small vessels were secured by torsion.

No attempt was made to compress the subclavian artery, which, to say the least, is rarely necessary; it is far better to ligate vessels as they are cut, or, if more convenient, to apply compressing forceps until they can be permanently secured.

The flaps were trimmed so as to remove the cicatrix resulting from the previous operation, and two or three hardened and slightly enlarged glands were removed from the axilla. The flaps came together accurately, and were secured by sutures. The shock was slight, reaction being completely established in two hours. The incisions healed throughout their entire length by primary union, excepting at the bottom of the lower cut, which was purposely left open for drainage. Convalescence was rapid and uninterrupted save once, caused by the premature closing, through an oversight, of the drainage opening.

On the eighth day, the patient had a slight chill and some fever, an examination of the wound showed a small accumulation of fluid at the most dependent portion. An opening was made, not in the line of the

primary incision, a drainage tube inserted and the cavity thoroughly washed out with carbolized water. The discharge at no time great, gradually diminished, but, as a precautionary measure, the opening was continued until the falling of the ligatures. At the date of this report, November 20, 1882, the patient is enjoying excellent health, and there is no sign of a return of the disease.

It is not our present purpose to discuss, at length, the surgery of the scapula, but simply to record the above case as a contribution to the statistics of operations in this region.

The scapula has now been so often excised, either alone or with the arm and clavicle, and the results, so far as recovery from the primary operation is concerned, have been so uniformly successful that these operations are universally accorded a place in legitimate surgery. Indeed, the excision of the scapula, preserving at the same time a fairly useful arm, has been fitly named by Sir William Fergusson, the *ne plus ultra* of conservative surgery. Many surgeons entertain grave doubts as to the propriety of operating in cases similar to the one herein reported. Prof. Agnew in his work on Surgery, now being published, uses the following language: "In cases of enchondroma, caries, necrosis, and injury, the excision of the scapula, entire or in part, comes legitimately within the sphere of operative surgery; but when undertaken for the cure of malignant disease the propriety of such a procedure is very questionable indeed. And this opinion is formed after having carefully analyzed the results of operations executed for this purpose." Not a few, however, would dissent from this opinion. Perhaps no general rule can be formulated since the circumstances of each case must largely determine the advisability of operative procedures. But as pointed out by Rogers, in his classical article on "Excision of the entire Scapula," which appeared in this Journal in 1868, "we are not without hope even in unquestionably cancerous affections of this bone."

The celebrated cases of the elder Mussey, Syme, Rigaud, and others, in which life was prolonged from a few months to more than thirty years, certainly affords encouragement to operate. It would seem that where the entire disease can be removed with reasonable safety, the patient, after a frank statement of all the facts and probabilities, should have the benefit of the operation if he or she so elects. In our case, Mrs. H—— unhesitatingly says that the immunity from pain since the excision amply repays her for submitting to the operation, even though the disease should again recur.

There are now recorded fourteen excisions of the scapula, with and without portions of the clavicle, subsequent to amputation at the shoulder-joint. We append a tabular statement embracing the salient points of each case so far as we have been able to gather them.<sup>1</sup>

<sup>1</sup> I am greatly indebted to Drs. J. S. Billings and J. Ashhurst, Jr., for assistance in compiling the table.

No	Operator.	Date.	Operation.	Disease.	Result.	
1	Mussey	1837	Removed scapula and clavicle 6 years after amputation at shoulder, and 19 years after amputation at metacarpus.	Osteo-sarcoma. Male, æt. 40 at date of last operation.	Recovery	Healthy and active 30 years after last operation.
2	Rigaud	1842	Removed scapula and outer end of clavicle eight months after amputation at shoulder.	Osteo-sarcoma. Male, æt. 51.	Recovery	Enjoying good health 3 yrs. after operation.
3	Fergusson	1847	Removed scapula and outer end of clavicle three years after amputation at shoulder	Caries. Male, adult.	Recovery	Permanent.
4	Sonpart	1857	Removed acromion, glenoid cavity, and internal table of anterior border of scapula, subsequent to amputation at shoulder.	Fibro-plastic tumour.	Recovery	Died from a recurrence of the disease in less than 3 months after operation
5	Langenbeck	1862	Removed scapula and one inch and a half of clavicle subsequent to amputation of arm.	Osteo-sarcoma. Male, æt. 23.	Recovery	Lived 18 mos. after operation.
6	Buck	1864	Removed scapula and part of clavicle, after amputation of arm.	Osteo-cancer. Male, æt.	Recovery	Died a few mos. afterwards from a recurrence of the disease.
7	Busch	1864	Removed scapula and part of clavicle, after amputation of arm.	Osteo-cancer. Female.	Recovery	Healthy 2 years after excision.
8	Krakowizer	1868	Removed scapula 5 years after amputation at shoulder	Euchondroma	Death.	7 days after the operation.
9	Stimson	1872	Removed scapula nine months after amputation of arm.	Spindle-celled sarcoma.	Recovery	
10	Jeaffreson	1873	Removal of scapula and $\frac{3}{4}$ th of the clavicle four months after amputation of arm.	Osteoid cancer. Female, æt. 20.	Recovery	Disease recurred in stump very soon after operation. Death.
11	Deroubaix	....	3 operations were made. Resection of the head of the humerus; amputation at shoulder; and, finally, excision of the scapula. Interval between operations not given.	Malignant disease.	Recovery	Died a few mos. afterwards from a recurrence of the disease.
12	Rigaud.	1875	Removed scapula eighteen months after amputation at shoulder-joint.	Osteophytes.	Recovery	Healthy 6 years afterwards.
13	D'Ambrosio.	1880	Removed scapula and end of clavicle 11 months after amputation.	Myxo-sarcoma.	Death.	Survived operation 13 days.
14	Conklin	1882	Removed scapula and 3 inches of clavicle six months after amputation at shoulder-joint.	Osteo-sarcoma. Female, æt. 37.	Recovery	

## ARTICLE VIII.

A CASE OF DOUBLE OVARIOTOMY, INVOLVING THE REMOVAL OF THE UTERUS AND ITS APPENDAGES, WITH RECOVERY, OCCURRING IN THE SERVICE OF DR. T. G. THOMAS IN THE WOMAN'S HOSPITAL, N. Y. Reported by JAMES R. GOFFE, M.D., House Surgeon.

THE rapidly multiplying cases of ovariectomy and the new and varied complications that constantly arise, are emphasizing the fact that the successful operator must be a man not only of mental acumen in diagnosis and skill in manipulation, but of ready resource and unflinching courage. No matter how carefully the conditions of the case may be conned over and its complications mapped out, the real conditions and demands can never be known till one is in the midst of the operation. Time consumed then in hesitation and elaborate consultation is fatal and no step backward can safely be taken. A striking illustration of this has recently occurred in the service of Dr. Thomas.

The patient is an American woman, 38 years of age, of medium size, auburn hair, fair complexion, and inexhaustible pluck. She gives a history of remarkably good general health up to the time of an accident six years ago. She menstruated first at the age of 13, always regular, duration four days, amount normal, no pain. At 18 she was married and ten months later gave birth to her first and only child. Has not been pregnant since. Her husband died 11 years after marriage.

Six years ago when riding in San Francisco she was thrown from her carriage and received serious injuries, especially about the face and head, to which some ugly scratches on her left cheek and temple still testify. Since this accident she has suffered with neuralgic pain in the head at her monthly periods and frequently at other times. For the past three years has felt a gradually increasing languor with backache and general indisposition. In January, 1882, first noticed a burning sensation in left ovarian region, and in March Dr. Thomas discovered on examination a small ovarian tumour in the left side. This rapidly increased in size and, to the patient, seemed to stretch across the abdomen crowding everything before it. But on September 15th Dr. Thomas made a second examination and discovered a second tumour, of the right ovary. She was advised to enter the Woman's Hospital at once, and did so October 6th. Upon admission the abdomen was enormously distended, and the only comfortable position the patient could occupy was sitting saddle fashion astride a steamer chair, the abdomen being thus supported between her thighs. She said she had lost flesh, but not much strength, appeared fairly nourished, was nervous, and suffering from morning nausea and numbness of right leg which was very œdematous. Waist measure at the umbilicus 43½ inches.

Patient was placed at once on usual preparatory treatment; viz., the bowels were thoroughly cleared by compound cathartic pills, the skin softened by vaseline baths, and the general system toned up with quinine. As is usual in such cases the operation was performed in one of the cottages on the hospital grounds. The atmosphere of the room was charged with carbolyzed spray and the temperature raised to about 90°.

Dr. Thomas operated, assisted by Drs. Ward, Nicoll, and the House Staff. There were present Drs. Hunter, Lee, Swasy, Townshend and others. Anæsthetic used was ether. Date of operation October 14, 3 P. M.

An incision was made in the median line, between the pubes and umbilicus, three inches long, down to the peritonæum. This membrane was then raised on a tenaculum and snipped with scissors, whereupon a decided gush of ascitic fluid followed. A large sound was then passed into the wound and an endeavour made to sweep it around the tumour. This was prevented by the firm adhesions. The wound was therefore enlarged and the tumour found adherent to walls of abdomen, uterus, bladder, and intestines, and reaching down into the true pelvis was firmly adherent to its walls on all sides. The adhesions above were broken away or carefully dissected off, the patient turned on her side and a large trocar plunged into the tumour. This gave slow exit to a dense colloid material. The trocar was withdrawn, the opening into the tumour enlarged, and the hand inserted to break down the partition walls of numerous cysts in the interior and discharge their contents. This allowed the sac to be partially drawn through the incision, revealing some papillomatous masses on its posterior surface. It was then discovered that the tumour and the uterus with its appendages were so intimately matted together as to necessitate their removal *en masse*. They were therefore enucleated by tearing them away from their pelvic attachments with the fingers and the closed blades of a pair of blunt-pointed scissors. The cervix uteri was transfixed at the vaginal junction, ligated with the double ligature of carbolized silk and cut across just above the point of ligation. Several silk ligatures were applied to bleeding points from ruptured adhesions,—the abdominal cavity carefully sponged out and the incision closed with silver wire, the stump of the cervix uteri being caught between the lips of the wound by one of the sutures. A glass drainage tube was previously passed into the cul-de-sac and left. Time of operation, thirty-one minutes. The usual antiseptic dressings were then applied and the patient put to bed with hot eans at her feet.

She bore the operation comparatively well, recovered promptly from the ether and rallied nicely. At 10 P. M., temperature,  $100\frac{3}{4}^{\circ}$ , pulse 120. She was kept quiet and free from pain by morphia administered hypodermically and the rise of temperature prevented by the ice-water coil. This was applied to the abdomen whenever the temperature reached  $100^{\circ}$  and removed when it descended to  $99^{\circ}$ . By this means the temperature was so perfectly controlled that at no time did it rise above  $101^{\circ}$ , and reached that point only once.

No unfavourable symptoms developed, except a persistent vomiting which was finally relieved by frequent sips of hot water. The patient continued to improve and on the night of the second day commenced taking nourishment by mouth. This consisted of a teaspoonful of milk and lime-water, alternating every hour with brandy and water. The nourishment was gradually increased as the stomach permitted.

On the seventh day (October 20th) the drainage tube was removed and the patient transferred to the house. On two previous occasions the drainage tube had been uncorked and about a drachm of bloody fluid removed with a syringe each time. October 22d, bowels moved by enemata of oil and draughts of Hunyadi water. October 23d, sutures removed, some induration at site of pedicle, no suppuration. This induration

has softened down and discharged at lower angle of the wound. At the time for her monthly sickness there was a slight sanguineous discharge both from the wound and vagina. On November 6th, the twenty-fourth day after the operation, patient sat up for the first time. At present writing (November 14th) she is sitting up thirty minutes each time, three times a day. Appetite is good, bowels regular, and discharge from wound so slight that it is dressed only every second day. There is every prospect of her perfect recovery.

Dr. Wm. H. Welch, who is the Pathologist to the Hospital, has kindly allowed me to use his report of the examination of the tumour, which is herewith appended.

The specimen consists of a large multilocular cystic tumour surrounding laterally and posteriorly the body of the uterus, which had been removed in part with the new growth. The part of the uterus removed consists of the fundus and adjacent portion of the body; it measures  $5\frac{1}{2}$  ctm. in length,  $2\frac{1}{2}$  ctm. in thickness (antero-posterior diameter), and  $4\frac{1}{2}$  ctm. in transverse diameters (from right to left). The length of the uterine cavity removed is  $3\frac{1}{2}$  ctm.

Posteriorly and at the sides the tumour is closely adherent to the uterus. Careful examination reveals that what at first appears to be a single tumour, in reality consists of two similar tumours of nearly equal size, which have coalesced with each other posteriorly. The line of union between the two tumours is a vertical white line, visible along the posterior aspect of the tumour, and on a level with a plane passing through the right border of the uterus. Corresponding to this line the tumours can be partially dissected apart.

The transverse diameter of the whole tumour is 23 ctm.; the tumour on the left side measuring 12 ctm. and that on the right side 11 ctm. (Three large cysts had been evacuated before the tumour came into my hands, thus reducing somewhat the measurements.) The vertical diameter of the tumor is 14 ctm. The circumference measures 47 ctm.

The external surface of the tumour is covered by peritoneum except on the inferior aspect. This peritoneal covering is directly continuous with that of the uterus, in such a manner as to show that a tumour has grown from each side, between the layers of the broad ligaments, so as to come into close juxtaposition with the uterus. It can be seen, however, that the tumour does not take its origin from the uterus. The tumour, or more strictly speaking the tumours, grow symmetrically on each side of the uterus, between the layers of the broad ligaments; behind the uterus, however, they have grown together, so that from this aspect the appearance is that of a single tumour.

The relations to the Fallopian tubes are those usually met with in intraligamentous tumours. On the left side the Fallopian tube can be traced over the superior surface of the tumour, with which it is closely incorporated, for a distance of 10 ctm. The fimbriated extremity is obliterated and lost in the outer surface of the tumour. The lumen of the tube is of normal calibre and patent, except toward the abdominal extremity.

On the right side the Fallopian tube can be traced for about the same distance, and is likewise imbedded in the outer wall of the tumour. At a distance of  $2\frac{1}{2}$  ctm. from the uterus the right Fallopian tube suddenly changes its direction, and bending at a right angle, can be traced down-

ward over the posterior aspect of the tumour for several centimetres along the before-mentioned line of union between the two tumours. From the angular bend downward the tube is considerably dilated and communicates by a small round opening with a large cyst belonging to the left tumour. Ciliated epithelium lines this cystic dilatation of the tube.

On each side of the uterus near the plane of section can be seen many large vessels and the divided extremities of the round ligaments.

The tumour consists of many large and small cysts nearly all containing growths of an exquisite papillomatous character. The largest cyst is about the size of the head of a new-born infant. In several instances the cysts are completely filled with papillomatous growths. These growths in some places have perforated the cyst-walls and have grown from one cyst into another. They have even in places burst through the outer cyst-walls so as to grow out free into the peritoneal cavity. Of course where these papillomata extends, the peritoneal covering of the tumour is deficient. The largest of these free papillomatous growths is on the left side and is about the size of an orange. This, as well as most of the papillary excrecences, is attached to the cyst wall by a rather small pedicle of fibrous tissue which can be traced into most of the ramifications of the growth.

The cystic walls as a rule are not more than a millimetre in diameter. The outer cyst wall is divisible into an inner mucous, a middle fibrous, and an outer serous tunic.

The fluid contents of the cysts are thick and viscid. It varies in colour from yellowish to brown in the different cysts.

On the anterior surface of the uterus can be seen three or four small subserous myo-fibromata, the largest being the size of a walnut. These have nothing to do with the cystic tumour.

There are also many very small yellowish and white nodules of soft consistence varying in size from a pin's head to a pea scattered over the surface of the uterus and over the surface of the tumour, especially numerous over the right Fallopian tube. These, as the microscopical examination shows, are little papillomatous growths which have undergone fatty and calcareous degeneration, and which doubtless have originated from cells which have fallen off from the papillomata extending from the cysts into the peritoneal cavity.

The microscope shows that all of the cysts are lined by cylindrical epithelium. The papillomata are covered with cylindrical epithelial cells, some of which are ciliated. They also present an adenomatous structure, containing an abundance of tubes and spaces lined by cylindrical epithelium. The cylindrical epithelium resembles that found in ovarian cystomata. It is in places granular, in other places it has the characters of goblet cells.

Smooth muscular fibres can be demonstrated beneath the peritoneum over the outer surface of the tumour near the uterus. These fibres belong to the broad ligament.

Two specimens of fluid were examined, one obtained from the peritoneal cavity, the other from one of the cysts.

1. Peritoneal fluid. *Colour*—amber (like that of urine); *Consistence*, slightly viscid, but the fluid drops readily; *Reaction*—strongly alkaline; *Specific gravity*—1022.

*Chemical examination* reveals an abundance of albumen both of that precipitated by heat, and that precipitated by acetic acid. The fluid



solidifies upon boiling. The acetic acid precipitates in great part but not completely, dissolves in an excess of the acid. Mucin is therefore present.

*Microscopical examination* reveals, 1. epithelial cells identical in appearance with those covering in the papillomatous growths and lining the cysts. These cells occur in groups, are often vacuolated, and frequently present in the most typical manner possible the budding appearances described by Tenlis and Thornton as characteristic of cells found in ascitic fluid due to cancer of the peritoneum, or of an abdominal viscus. 2. Small, round, granular bodies, about the size of red blood corpuscles, unaffected by acetic acid, without nuclei; 3. Colloid drops; 4. Red blood corpuscles; 5. Calcareous bodies of small size; 6. Bacteria and granular matter, some of it fatty.

II. Fluid from one of the cysts. *Colour*—Yellowish red; *Consistence*—Viscid and ropy fluid, does not drop readily; *Reaction*—Strongly alkaline; *Specific gravity*—1026.

The chemical and microscopical examinations are substantially identical in results with the above.

*Diagnosis*.—Intraligamentous, papillomatous, ovarian cystomata, one growing from each ovary and coalescing so as to form a single tumour, and to envelop posteriorly and laterally the uterus. Bursting of the outer wall of the cysts in consequence of the growth of the papillomatous masses into the peritoneal cavity.

OCTOBER 15, 1882.

## ARTICLE IX.

CERVICAL RIBS.<sup>1</sup> By FRANCIS J. SHEPHERD, M.D., M.R.C.S. Eng., Demonstrator of Anatomy in McGill University, Montreal. Surgeon to the Out-Patient Department of the Montreal General Hospital, etc.

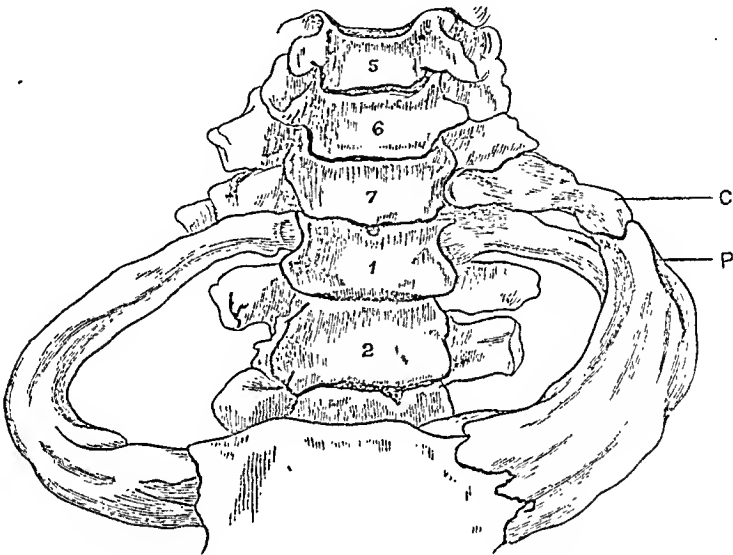
FROM the circumstance that supernumerary cervical ribs are rarely met with in man, I have thought that a short account of some examples which have recently come under my observation might prove of interest.

CASE I.—This occurred in the dissecting room of McGill University during last winter's session, and was fortunately noticed before the soft parts were destroyed and the dissection carefully recorded by myself at the time. The subject was a female between fifty and sixty years of age. Vertebral formula, C 7, D 12, L 5, S 5, C 4. The supernumerary cervical rib occurred on one side only, the left, and had a distinct head, neck, tubercle, and body. Anteriorly it ended by articulating with a bony elevation 1 centimetre high, and 2 centimetres broad, on the upper surface of the first thoracic rib 1.5 centimetre in front of its tubercle. Both the extremity of this process and the anterior end of the cervical rib were encrusted with cartilage, and the two were united by a capsular ligament which formed a freely movable joint. The head of the cervical rib articulated with what Mr. Turner describes as a "tubercle like elevation"

<sup>1</sup> Read before the Canada Medical Association, Sept. 1882.

on the side of the body of the seventh cervical vertebra, and was held in position by a strong ligament. Its tubercle had a broad movable articulation with the transverse process of the same vertebra. On the upper surface of the neck of the rib were two distinct grooves separated by a prominent ridge; the innermost groove was small and lodged the vertebral artery, which passed up and entered the transverse process of the sixth cervical; the outer groove was of large size and had placed in it the

Fig. 1.



C, Cervical rib articulating with process, P, on the upper surface of first thoracic rib.

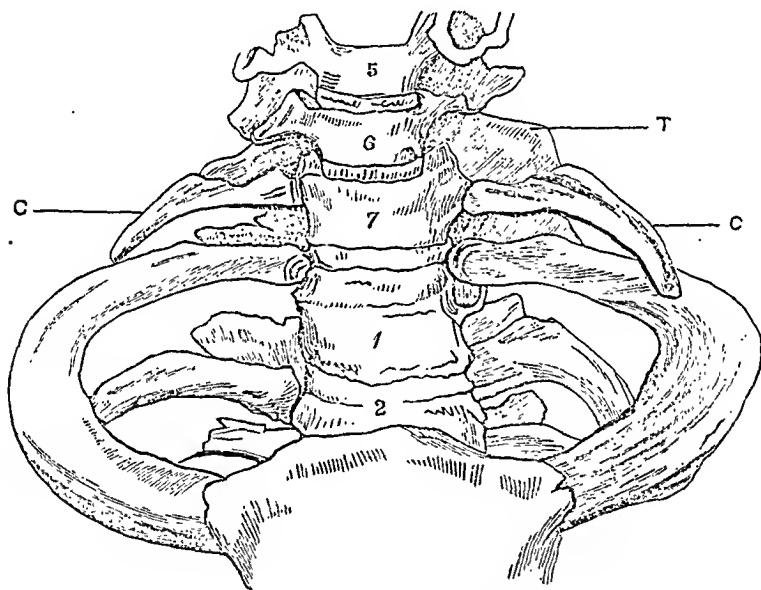
seventh cervical nerve, the eighth nerve passed out between the supernumerary rib and the first thoracic and united with the seventh at the anterior border of the cervical rib. The united nerve was joined by the first dorsal to form the lower cord of the brachial plexus, which when formed passed down grooving the under surface of the bony prominence on the upper surface of the first thoracic rib. Immediately anterior to this cord was the subclavian artery. A few muscular fibres were seen passing between the anterior transverse process of the sixth cervical and the ridge on the upper surface of the neck of the supernumerary rib. This probably was an intertransverse muscle. The scalenus anticus muscle was normal; the scalenus medius was inserted into the cervical rib, the process on the upper surface of the first thoracic rib, and also into the whole of its border between the process and the tubercle, thus filling up the interspace between the supernumerary and first rib. The head of the first rib articulated as is usual in these cases, not only with the first dorsal but also with the seventh cervical. The seventh cervical vertebra presented the appearance of a dorsal, the transverse process on both sides being quite like. The anterior transverse process on the right side was rudimentary, presenting the appearance of a short spine  $\frac{1}{3}$  centimetre long and not arching over to meet the posterior transverse process. The sixth cervical was the same on the left side, the anterior transverse process standing out as a spine 1 centimetre long and not reaching outwards and backwards far enough to unite with the posterior process. The first rib on the right

side was distinctly longer and narrower than that on the left side.<sup>1</sup> The anterior and middle scalene muscles had a continuous insertion along the upper border of the first rib from the scalene tubercle to the tubercle of the rib, and in front of the conjoined muscle was the subclavian vein; the subclavian artery with the brachial plexus passed through a slit in the fused muscle one inch above its attachment to the rib.

In the same subject there was ankylosis of the spines, transverse processes, and bodies of the fifth, sixth, and seventh dorsal vertebrae. The intervertebral substance had disappeared from between the bodies of the vertebrae. The left transverse processes of the third, fourth, and fifth lumbar vertebrae were also united together by bone.

CASE II.—This is a beautiful example of cervical ribs occurring in a skeleton which Dr. T. Roddick of this city purchased in Paris some years ago for anatomical purposes, and which he afterwards kindly placed in the Museum of the Medical Faculty of McGill University. The skeleton

Fig. 2.



C C. Cervical ribs. T. Transverse process of seventh cervical vertebra.

is that of a well-developed adult male, and has on each side a supernumerary cervical rib. Both ribs are provided with a head, neck, tubercle, and body. The left measures seven cent. in length, and ends anteriorly in a blunt point, which is grooved as if for the subclavian artery; on the upper surface of the neck are two grooves, as in the case above described, though not so well marked, which probably lodged the vertebral artery and seventh cervical nerve. The right cervical rib measures only five cent. in length, and is much slighter than the left, gradually tapering down to a fine point. It also presents two grooves on the upper surface of its neck, similar to those on the right, but not so strongly marked.

<sup>1</sup> The right rib measured 15 centimetres long by 2 centimetres broad. The left rib measured 12 centimetres long by 3 centimetres broad.

Both ribs in the fresh state probably floated free anteriorly, the ends show no sign of being tipped with cartilage, nor is there any trace of a bony process on the upper surface of either of the first thoracic ribs. The left cervical rib articulates by its head with a prominent tubercle on the side of the body of the seventh cervical, on the right side this tubercle is hardly to be seen.

Both first thoracic ribs articulate with the sides of the bodies of the seventh cervical and first dorsal. In this skeleton the twelfth dorsal vertebra resembles not an ordinary twelfth dorsal, but possesses a transverse process like the tenth and eleventh dorsals, and on the anterior surface of each transverse process, near where it joins the body of the vertebra, is a raised tubercle, which has articulating with it a rudimentary twelfth rib. The twelfth ribs are merely flat pieces of bone, with a head which articulates only with the base of the transverse process. The right measures 4.5 cent. in length, and the left 4 cent.

The first lumbar vertebra is like an ordinary twelfth dorsal; has no transverse process proper, but in its place on each side is a tubercle-like process tipped with an articular facet, which evidently carried a short lumbar rib. Vertebral formula, C 7, D 12, L 5, S 5, C 4.

CASE III.—This was seen in the right side of a male patient who died in the Montreal General Hospital during the last summer. It was noticed before death, but not recognized as a case of cervical rib. Owing to objections made by the friends, it was only hurriedly examined at the post-mortem examination, which was sufficient to make out that the rib had a head, neck, tubercle, and body, that it floated free anteriorly, and that the subclavian artery did not pass over it.

M. Hainault<sup>1</sup> 140 years ago described nearly all the forms of cervical ribs, and Dr. Knox<sup>2</sup> figures several of his cases, among others, that rare form where the supernumerary rib is attached to the sternum by a special cartilage of its own. Dr. Knox,<sup>3</sup> of Edinburgh, has also described some cases of his own, and was the first to draw attention to the fact that the "laws of transeendental anatomy" (evolution?) explain their occurrence.

The seventh cervical vertebra presents an intermediate condition between the cervical and dorsal vertebræ, inasmuch as the anterior transverse process is developed, as was first pointed out by Beclard, from a separate nucleus which corresponds with the head and neck of a rib.<sup>4</sup> It appears about the third month, and unites with the body of the vertebra and posterior transverse process about the fifth year. Sometimes it never unites with the rest of the vertebra, but remains as a separate bone, often growing beyond the posterior transverse process, and developing into a supernumerary or cervical rib. Sometimes in these cases a true anterior transverse process is developed behind the rib, corresponding to the anterior transverse processes of the cervical vertebræ.

Cervical ribs usually occur on both sides of the seventh cervical vertebra, but often on only one side, as in two of my cases. More than one

<sup>1</sup> Mém. de l'Acad. Roy. des Sciences, 1740, Paris, 1742.

<sup>2</sup> London Medical Gazette, vol. xxxiii. 1843-4.

<sup>3</sup> Loc. cit.

<sup>4</sup> Humphrey on the Human Skeleton, p. 126.

pair has never been met with in the same subject. They may consist merely of a head, neck, and tubercle, or may have a body as well, which floats free, or is attached to the first rib by bone or ligament. They may also, as in my first case, articulate anteriorly with a process growing from the upper border of the first rib. Again, they may be tipped with cartilage anteriorly, and this cartilage in rare cases may unite with the sternum or first costal cartilage, or they may be attached to the sternum by fibrous tissue or ligament. Sometimes, especially when small, they may be ankylosed to the body and transverse process of the seventh cervical, or to the transverse process only. According to Prof. Turner:<sup>1</sup>—

“Cervical ribs may be either the unusually developed rudiments of the anterior transverse process or rib of the seventh vertebra, or merely unusually developed epiphyses, articulating only with the transverse process of the seventh vertebra. In the former case, which is the more frequent, they are more homologous with the inferior roots of the transverse processes in birds and the cervical ribs in crocodiles; in the latter with the rudimentary ribs connected with the eighth and ninth cervical vertebrae of the *Bradypus tridactylus*” (three-toed sloth).

If the cervical rib reaches anteriorly past the tubercle for the scalenus anticus, then this muscle is attached to it, and the subclavian artery passes over it. This abnormal position of the subclavian artery has been mistaken for aneurism. The existence of the cervical ribs has often been discovered during life, and has sometimes, as in my third case, been taken for an exostosis. Prof. W. Gruber has published, in the *Memoirs of the Imperial Academy of St. Petersburg*,<sup>2</sup> a valuable paper on cervical ribs, in which he reviews the whole of the literature of the subject. He describes five cases which he has himself seen, and mentions seventy-six other cases in man, which have been recorded, occurring in forty-five individuals.

Prof. Turner<sup>3</sup> gives a description of seven cases, many of them museum specimens. In only one was he fortunate enough to obtain a knowledge of the arrangement of the soft parts, and in one they were recognized in a living person.

Prof. Struthers<sup>4</sup> describes ten cases, many of them very rudimentary. Two much resemble my first case. He also relates two cases occurring in living individuals, in one of which the subclavian artery passed over the cervical rib, and was raised quite two inches above the clavicle. Sir James Paget has diagnosed several cases in the living subject, and says:<sup>5</sup> “In each case the imitation of aneurism was close enough to deceive an unwary surgeon; but to one who examines closely, and has in his mind what the case may be, the mistake seems scarcely possible so long as the artery is healthy. I can well believe, however, that great difficulty of diagnosis

<sup>1</sup> Journal of Anat. and Phys., vol. iv. 1870.

<sup>2</sup> Vol. xiii. No. 2, 1869.

<sup>3</sup> Loc. cit.

<sup>4</sup> Jour. Anat. and Phys., vol. ix. 1875.

<sup>5</sup> Jour. Anat. and Phys., vol. iv. p. 136.

would exist in any case in which the unusual arrangement of the parts is combined with a morbid state of the artery, especially with that state in which the arteries, not evidently diseased in texture, have more than natural pulsation. This state is common in the abdominal aorta, and I have seen it in the subclavian and carotid arteries." Prof. Struthers mentions a case which was brought to him for operation as a case of malignant growth, but which he easily recognized as a case of cervical rib. In this, as in my third case, the artery did not go over the supernumerary rib.

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#### ARTICLE X.

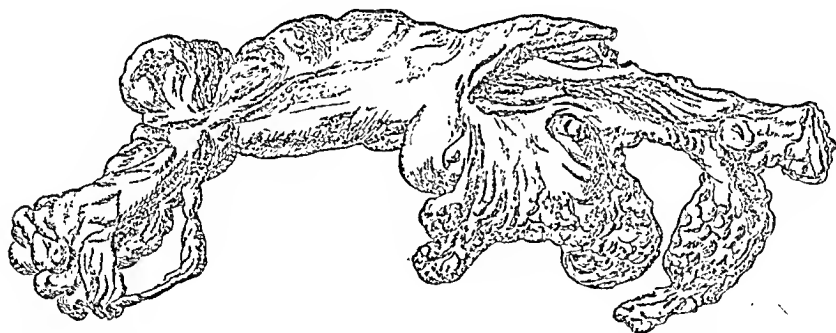
REPORT OF A CASE OF STRANGULATED HERNIA, COMPLICATED BY A VERY EXTRAORDINARY DISEASED SPERMATIC CORD. By JOHN L. ATLEE, M.D., of Lancaster, Pa.

OUT of nearly fifty cases of strangulated inguinal hernia upon which I have operated, this is one of the most extraordinary. The patient, residing nine miles from Lancaster, in Manor Township, John W., aged about 46, dark complexion and rather spare habit, and not remarkable for intelligence, had had a congenital, left inguinal hernia. This had occasionally been strangulated, but was readily replaced. Last Friday week, Sept. 15, 1882, while riding, his horse shied, and in trying to recover himself the bowel came down and was strangulated. After repeated efforts to relieve himself, Dr. Henry Wellinger was sent for, and, until I saw him, had made repeated efforts for his relief. At times he would suffer great pain, sickness at stomach, and vomiting, then he would get a little better. He could get no evacuation from his bowels, and at last concluded to send for me. When I saw him at 11 o'clock, September 28th, I found a slight coolness, not coldness, at the wrist; pulse about 100; skin generally warm, *somewhat* comatose, although the doctor told me he had given him no opium. The scrotum was enormously enlarged; at the bottom it was 12 inches in circumference, and came down nearly half way to his left knee. The surface of the scrotum was marked by numerous large and very dark veins. The bulging at the external ring was as thick as my wrist, and no impression was made by the taxis. As thirteen days had already elapsed, I proceeded at once to the operation. The incision, four inches long, was made in the course of the cord. I found a great many layers of condensed cellular tissue, and had great difficulty in pinching up the sac so as to make a careful opening of it without wounding the contents. I succeeded at last, and opened it to the whole extent of the external wound. I had previously attempted to relieve the stricture without opening the sac, but such was the condensation of tissue that I found it impossible. The first thing that presented was a large mass of omentum running down to near the bottom of the scrotum. This was raised up, and I found a knuckle of intestine, *ilium*, about 5 inches in length, firmly strangulated and of a dark mahogany colour, but with no ash-coloured spots. In passing my finger into the ring I found three particularly sharp edges, all of which I successively divided with the Cooper

bistoury, making attempts after each incision to reduce the intestine. After passing my finger through the ring in every direction, occasionally meeting adhesions, I at last succeeded in effecting the reduction. But this was not all. From the ring proceeded a cord as thick as a lead pencil for about three inches. It then became much thicker and highly vascular, resembling the omentum which I had already removed. There was a large mass lying in the very bottom of the serotum, in some places nearly as thick as a bantam egg, with many smaller lumps extending down the mass, and fringed with highly vascular membranes; when drawn out it measured eighteen inches in length and weighed twelve ounces. As it approached the testicle it became as small as at its origin in the ring. I found the testicle wasted and very soft and firmly attached to the bottom of the cavity. At first I was very much puzzled to determine the character of this mass, thinking it might be a portion of the colon with enlarged and very vascular *appendices epiploicæ*. I finally came to the conclusion that it was an immense hypertrophy of the cord and epididymis, and concluded to remove it, which I did after tying at the ring above and at the testicle below.

After plugging up the ring with the stump of the omentum and cleansing the empty sac, I closed the external wound and applied a bandage. The patient bore the operation well, and I left him in Dr. M.'s care, promising to see him on Saturday. The next morning I received intelligence of his death the night after the operation from absolute exhaustion. He had not kept anything on his stomach for thirteen days.

[To illustrate the case of my father, the accompanying drawing has been



prepared. It is very exact. My former pupil, Dr. W. A. Edwards, a competent histologist, has been kind enough to give me the following account of the result of his examination of this extraordinary growth.

"It will not be necessary for me to say anything regarding the macroscopical appearance or peculiarities of the specimen, as it is so well illustrated by the accompanying drawing.

"When drawn out it measures eighteen inches; its weight is twelve ounces.

"*Microscopical* examination of sections taken from several portions of the growth proves it to be an *arborescent lipoma*, by that I mean a form of fatty tumour which is found in serous membranes.

"This growth sprang primarily from the serous surface of the epididymis and spermatic cord, finally converting both these structures into pure lipoma.

"The smaller masses and membranes festooned along the edges of the

growth are essentially of the same pathological structure and not omentum as I at first supposed. Microscopically the bloodvessels in the masses are seen to have very low-grade walls, and are not by any means the well developed vessels that we would expect to find in normal omentum. As far as I am able to ascertain, a similar growth in this situation has never been described. Dr. T. B. Curling, *Diseases of the Testicle*, p. 374, mentions a case somewhat similar.

"Nélaton, *Patholog. Chirurg.*, vol. v. p. 590, calls attention to these growths under the heading of fatty tumours of the spermatic cord.

"Both these authorities seem to describe a fatty infiltration, in which the normal structure still remains but is enormously loaded down by fat, rather than a fatty metamorphosis in which the entire histological structure has been replaced by adipose tissue, as is the case in the growth under consideration.

"Arborescent lipomas have been met with in the brain and pleura."

W. F. A.]

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#### ARTICLE XI.

REPORT OF A CASE OF OVARIOTOMY, IN WHICH THE EXPANDED BLADDER WAS WOUNDED, WITH RECOVERY. By WALTER F. ATLEE, A.M., M.D., of Philadelphia.

MRS. W., a resident for several years past of Washington, was brought to Philadelphia on August 3d, for the purpose of having an abdominal tumor removed, were it possible to do so. Her history, as written out by her daughter, is, that she was born in Indiana, in 1826. Was delicate in early life. Was married at fifteen years of age, and had two children before she was eighteen. Since then she had never become pregnant. In 1850 she took a trip of thirty-five miles in a buggy, and on the way a heavy rain came on and her clothing was saturated with water. Being some distance from her place of destination, she remained in this state for several hours, and, in consequence, lost her menses for nearly a year. She was finally restored to normal health; but suffered subsequently from neuralgia of the ovaries if she took cold. At the age of fifty years she had change of life, and for two or three years after she felt severe pain at times at the end of the spine (especially in turning in the bed). After her menses left her, she became quite fleshy, weighing 186 pounds, and retained this size until she discovered the tumour, which was not quite ten years ago. She was then put upon light diet for over six months, by a physician (but to no purpose), and she became quite reduced in flesh.

She first noticed the presence of something abnormal in the pelvis in the fall of 1880, and, having suffered for almost a year, consulted several physicians; the last one pronounced it a cyst, and proceeded to tap her the first time the 24th of January, 1882. After an interval of great suffering, she was tapped again in seven weeks; then again in eight weeks, and again in five weeks. Two weeks afterwards she came to this city to have the sac removed entirely. Each time she was tapped a little below the navel and somewhat to the left of the linea alba. She said the cyst was emptied always so completely that for several days she would think herself well. Then her pelvis would become so filled by the accumulation



of the cystic contents, that defecation was rendered almost impossible, and efforts to pass off the urine were made every half hour, and attended with very severe pains. The liquid drawn away in the tapplings was thick and dark coloured.

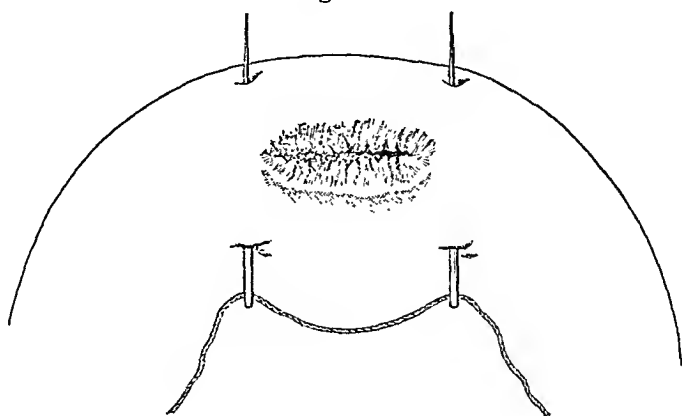
When brought to this city the patient was very thin, very weak, and her countenance was strongly marked by pain. Her pulse was over 120, and feeble. The tumour in the belly was the size of the womb in full pregnancy, and placed more on the left side than on the right. Fluctuation could be felt on palpation, but the contents were evidently very viscid. They did not, at all events, respond quickly and freely when the surface was struck by the hand. The skin was not attached to the tumour, but the mass could not be moved from side to side in the belly, it was adhering firmly in the left side of the pelvis. When the finger was introduced into the vagina it felt only a smooth hard surface, that was stretched firmly from the pubes to the sacrum, and bulged into the pelvic cavity. The patient said she made her water every half-hour, but refused to allow any attempt to explore the bladder, as causing unendurable suffering. These things naturally made the expansion of the bladder over the front of the tumour, and the existence of strong adhesions in the pelvic cavity, much to be dreaded.

Two days after her arrival in this city, the patient was subjected to an operation for the removal of this tumour. In its performance I was aided by Dr. Robert P. Harris, Dr. N. Hickman, and Dr. Louis W. Atlee. Just before being placed upon the table, a catheter was used by a most experienced nurse, who said the bladder was entirely empty, and that she could not push the instrument far into the viscus. This information, however, did not set my mind at rest, or make me less anxious about the position of the bladder.

The incision through the abdominal walls was made with the utmost care, a deep-red soft tissue was met with, in place of a whitish-blue membrane; this, necessarily, was either a thickened omentum, a thickened cyst wall, or a distended bladder. The incision in the abdominal wall was extended above the umbilicus, and cautious search was made in the upper part of the wound for the ovarian sac. When this was recognized beyond mistake, a trocar was introduced so as to empty some of the contents, and then, by means of the fingers, and occasionally by the handle of the scalpel, the sac was separated from the parts about it. For a space of some five inches it was necessary to leave its peritoneal coat attached to the rectum, and anteriorly in pushing away the adhering bladder, that was dragged up nearly, if not quite, to the navel, this viscus was torn so that the little finger could be passed into the opening. When the bladder began to tear, the separation was discontinued from above downwards, and was made towards this tear, from the side and from below upwards. Two large gushes of urine were seen to take place into the cavity of the belly while this was being done. With the exception of the portion of the peritoneal coat above spoken of as adherent to the rectum, the whole of the sac was separated from its various attachments and removed. In two places plaited silk ligatures were tied upon vessels that bled quite profusely when adhesions were being separated. There was no distinct pedicle to the sac, which was thick and easily torn; the contents were a glutinous, reddish fluid, and a large quantity of matter of a reddish colour also, and of the consistence of the brain-tissue, that covered the inner surface of the cyst wall.

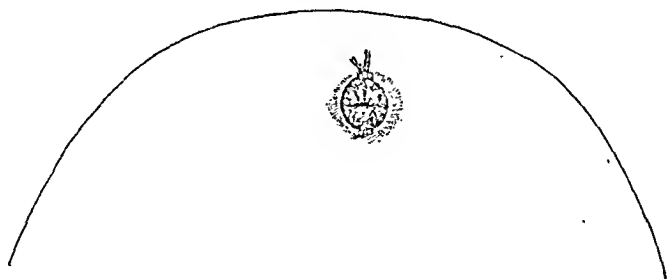
In order to close the tear in the bladder, a large gum catheter (No. 28) was passed through the urethra and then into the orifice, and, after an assistant had taken a firm hold of the bladder between the thumb and forefinger, on each side, it was withdrawn. The torn edges of the tear in the bladder were then pushed in, tucked in, invaginated, as is said (see Fig. 1);

Fig. 1.



a thick plaited silk thread was chosen, having a needle at each end; one needle was passed directly from before backwards through the walls of the bladder on one side, about one-quarter inch from the tear, and the other on the other, and then the thread was tied very firmly and cut off close to the knot (see Fig. 2). After cleaning carefully the abdominal cavity of

Fig. 2.



urine, blood, and escaped cystic contents, the wound in the walls was sewn up and the usual dressings applied.

The next day the report was that the patient had passed water several times herself; that it sometimes stopped while flowing away, and contained some blood. On introducing a catheter I found the urine that first came away was perfectly clear; what flowed away at the end was slightly reddened by blood. The catheter (Sims's self-retaining) was left in for two days, when it was removed as doing no good and as annoying to the patient. There was no further trouble with the bladder.

On the second day of the operation flatus was passed from the anus, and on the sixth day the bowels were opened several times.

On the seventh day there was a noticeable increase of heat towards

evening, the belly became swollen, and on the ninth day, when preparation had been made to pass a drainage tube through the lower part of the healed incision in the abdominal wall, a small opening formed there, and gave exit to a large quantity of red and most offensive liquid. This discharge diminished in quantity, and changed in character, becoming gradually but a small quantity of healthy pus, so that on the 23d of August, or the nineteenth day of the operation, the patient returned to Washington almost perfectly well.

Not much has been written on this wounding of the bladder in ovariectomy, but what has been written is quite sufficient to show what course should be pursued when this happens. "*Non numerandæ, sed perpendendæ sunt observationes*," as the great Morgagni declares. The cases are not numerous, but they have been well weighed by the men most capable of judging. Spenceer Wells, *On Ovarian and Uterine Tumours* (London, 1882), says, "Several cases are on record, and I have heard of others not recorded, where the bladder has been injured either in making the first incision, or in separating adhesions between the cyst and the bladder. Should the bladder be injured, the opening should be very carefully closed by sutures, and a catheter maintained in the bladder for several days. As a rule, the effects have not been serious, although in several cases the urine has drained through the wound for several days." (p. 333.)

Courty (*Traité Pratique*, etc., Paris, 1881) says, "If the bladder is wounded, the edges must be sewn together, and a catheter be retained in the urethra," p. 1294; and he then gives the ten cases from Eustache's *Memoir*, "De la lesion des organes urinaires pendant l'operation de l'ovariotomie," in *Journal des Sciences Médicales de Lille*, 1880.

Kæberlé (article "Ovariectomy," in the *Nouveau Dictionnaire de Médecine*, etc., Paris, 1878) says, "A wound of the bladder is very serious; the edges must be sutured, and for several days a catheter retained in the urethra." (p. 604.)

Billroth says, in the New Sydenham Society's translation of Billroth's *Clinical Surgery*, page 304, "Another complication that I have always found dangerous, consists in adhesions to the uterus and bladder; in separating them great care is required. The only method of controlling the hemorrhage is to apply pressure. In two cases of this description urine escaped through the wound four or five days after the operation; the vesical fistule healed up spontaneously in the course of a few weeks. In another case vesical catarrh and pain persisted for a long time."

Dr. Eustache, to whose memoir Dr. Courty refers, on the occasion of such a misfortune happening to himself, addressed himself directly to all the principal surgeons who practise ovariectomy to ask them if they knew of any similar cases. Péan, H. Smith, Spenceer Wells, S. Knowsley Thornton, and Tauffer report cases where *urinary fistule followed the operation*; in two of them the bladder was included in the clamp. Mr. Bantock records one case, and Mr. Thornton two, where the bladder was

opened during the operation, and these, with the one Dr. Eustache reports himself, make four cases he has collected.

There is in the *Transactions of the American Gynecological Society* for the year 1881, a paper by Dr. T. Gaillard Thomas on cases similar to the one I have here reported, of which a bibliographical notice was given in this Journal in the July number of last year; and in the April number is a paper on ovariectomy by Dr. Engelman, in which this complication of expanded and adherent bladder is particularly dwelt upon.

Thomas has recorded his own successful case, and seven others, all of which died. In all the bladder was injured during the time of the operation. The operators, or reporters, were Borgman, Stelling, Hale, Pallen, McLean, Drix, and Thomas, and Dr. Noeggerath.

In the memoir of Dr. Eustache there are, as said before, four cases of this kind, that is, of *bladder wounded at the time of the operation*. The wounds were sutured. Two of these cases died and two recovered. Of the six remaining cases in this memoir, one was an incision of the abnormally developed urachus, in the practice of Spencer Wells. He sewed it up in the suture of the abdominal walls, as was done by Dr. Thomas when he wounded the anterior wall of the bladder, and the patient recovered rapidly. In the five other cases the bladder was wounded, but not entirely opened at the time of the operation; the urine was not poured out into the peritoneal cavity, and a urinary fistula was established only at the expiration of several days.

If the anterior wall of the bladder has been incised, the plan adopted by Dr. Thomas, and followed by success, promises much better results than that of sewing up the opening by sutures, and returning the repaired viscus to the abdominal cavity. In sewing up the incision he passed Vidal's needle through the abdominal wall, then through the vesical walls where cut, and then through the other side, so as to sew up the vesical opening in the abdominal one.

On account of the importance attached to such things at the present moment it may be added to this report, that the ligatures used to be left in the cavity of the belly were of plaited silk, and that throughout the operation none of the so-called antiseptic precautions were practised, unless it may be thought proper to apply such a term to the having few persons present, to great care in having all things used of the best and cleanest, and to removing from the cavity of the abdomen everything that must undergo decomposition. I have never been influenced by belief that the animated microscopical bodies—the micro-organisms—found in decomposing tissues, had anything more to do in causing the death of those tissues than have the larger ones we see by the naked eye in animal bodies everywhere, after life has departed and decomposition begun. Indeed, it seems to me more in accordance with what we know of such beings, to believe that they serve a useful purpose in destroying bad tissues,

and rendering them harmless. I can see no evidence to show that these micro-organisms attack healthy tissues, or can in any way inflict injury upon them. A dead cell differs from a living one. Outside of the affinities by which every transformation in dead tissue is to be explained, unknown laws exist by which the changes in living tissues are governed. When, under the microscope, a solution of aniline red is placed upon living tissue, the cells are not coloured by it; if this tissue dies, the cells imbibe immediately the colouring matter; as Holmes puts it, "no convincing proof of the germ theory, as applied to *living tissues and living phenomena*, has, so far as I know, yet been offered." But, be this as it may, I never felt the need, from the results obtained, of using in my surgical practice, the so-called antiseptic precautions, beyond what are mentioned above.<sup>1</sup>

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## ARTICLE XII.

A CASE OF CONGENITAL CYST OF THE BACK OF THE HEAD, WITH SEROUS CONTENTS, ITS CAVITY UNCONNECTED WITH THAT OF THE SKULL. By LOUIS W. ATLEE, M.D.

THIS case is so rare as to be well worthy of record. I can find none like it except the one recorded in Billroth's *Clinical Surgery* (New Sydenham Society ed., p. 43). Billroth's account is illustrated by a figure showing the shape and size of the swelling. The cases are so similar, that in my account I shall in many places copy the one he gives, and do so as far as possible. In Billroth's case the child was a female.

John Patrick Brady, a male child, five days old, was brought to my father's office Sept. 19, 1882, from Nicetown, for a congenital tumour at the back of the head. The birth had been accomplished by natural means, and it was the first child. The father, who accompanied the child, was a large healthy man, and the mother's health was reported to be equally perfect. Nothing had occurred during the pregnancy to make her anxious or frightened.

This tumour gave the child exactly the appearance represented by the

<sup>1</sup> These results in figures are not given, for the reason stated above, that *cases are not to be numbered, but to be weighed*. The information, for example, to be drawn from the bare statistical results of the operations of one surgeon who was careful to not operate in certain cases, and who refused to operate in almost every case where he could not personally attend to the subsequent treatment, cannot be the same as that drawn from those of another, who did not decline any case, and who frequently never saw his patients after the operation. Dangers inherent in the operation, essential to it alone, may be and are increased by dangers to be attributed to the operator. *Non numerande, sed perpendendæ, sunt observationes*; and, moreover, as Fontanelle says, *l'art d'observer, qui n'est que le fondement de la science, est lui-même une très grande science*.

figure. It was soft, fluctuating, moderately full of fluid, and translucent when made tense. It was easy by the touch to satisfy one's self that there was no opening in the skull, and that the tumour was neither an encephalocoele nor meningocele. No other deformity was noticeable. In Billroth's case the right ulna was unnaturally short, so that the hand of that side was strongly adducted. The cyst was punctured by a small trocar, and about two ounces of liquid came away. It was of a pale yellow colour that became slightly tinged with red at the bottom on standing; neutral in reaction; contained some albumen and no sugar. The specific gravity less than 1.005. The microscope showed nothing but some blood corpuscles.



In Billroth's case the composition is given as follows:—

Scrum Albumin	. . . . .	4.29 p. c.
Myosin and Fibrin-forming ingredients	. . . . .	Very little.
Paralbumin	. . . . .	A trace.
Mucin	. . . . .	0
Urea	. . . . .	The slightest trace.
Sugar	. . . . .	Doubtful.
Sulphuric, Phosphoric, and Muriatic Acids,	}	A trace.
Sodium Chloride		

This analysis, according to Billroth, shows that the cyst did not contain cerebro-spinal fluid.

In Billroth's case the sac began to fill again slowly, but diarrhœa came on the day after the operation. This was followed by pneumonia, and the child died a week after the puncture. *Post mortem*: the cyst was found to consist of a thin-walled sac, with a very smooth lining. It lay in the cellular tissue beneath the scalp, and was entirely removable from the bone. No opening in the skull, or defect where some previously existing communication might have been shut off, could be found.

My father, after emptying the cyst, put a well-fitting cap on the child, and it was taken home. On the 16th of October, 1882, the child was brought back again with the tumour very much contracted, and evidently going away. About three drachms of the same kind of fluid were drawn off this time. The child was in robust health.

## ARTICLE XIII.

TUBERCULOSIS AS MANIFESTED IN THE LARYNX.<sup>1</sup> By J. SOLIS COHEN, M.D., Honorary Professor of Laryngology, and Lecturer on Diseases of the Throat and Chest in Jefferson Medical College, Philadelphia.

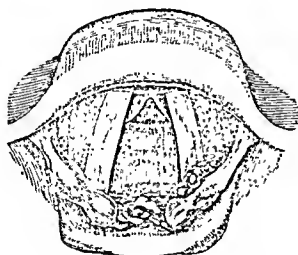
TUBERCULOSIS as manifested in the larynx, includes, as discussed in this paper, the entire range of pathological changes which ensue in the larynx as a result of its infiltration by tubercle. Attention will be directed both to the clinical pathology of the malady as revealed by laryngoscopy, and to its histological pathology as revealed by microscopy.

Following the resort to laryngoscopy as a means of objective diagnosis, announcements were soon made that the early presence of miliary tubercle could be detected in the mucous membrane of the living larynx; and that the entire progress of the tuberculous process could be studied from time to time in the laryngoscopic image. Similar assertions, indeed, are still made.

Small globular or semiglobular nodules, pin-head or thereabout in size, yellowish in tint, seen isolated or clustered at different portions of the laryngeal mucous membrane, were attributed to accumulations of miliary tubercle.

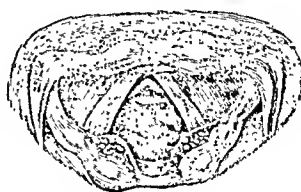
The customary destructive metamorphosis of these bodies, long before the death of the patient, prevents verification or denial of their initial tuberculous character upon positive premises. By prolonged observation, however, it has become demonstrated that these tuberculous-looking nodules (Figs. 1 and 2) always occupy localities normally beset with mucous

Fig. 1.



Distended mucous glands.

Fig. 2.



Distended mucous glands (of three years' standing).

glands;<sup>2</sup> whence the inference has arisen that they are not tubercles; but are rather hypertrophically distended mucous glands, filled, by occlusion of the orifices of their ducts, with accumulated products of secretion and des-

<sup>1</sup> A paper read before the Pathological Society of Philadelphia, Sept. 28, 1882.

<sup>2</sup> Inner surfaces of the arytenoid and supra-arytenoid cartilages, lower and inner surface of epiglottis, meso-arytenoid fold.

quamation; inflamed, perhaps, by some specially irritative quality in the hyper-secretions of the coexisting chronic catarrhal laryngitis. The ultimate destruction of these glands results chiefly from necrotic inflammatory processes set up by the pressure of tuberculous infiltrations around them and between their individual acini. In this manner follicular ulcerations are produced whose racemose configuration so closely resembles the crenated margins of some tuberculous ulcerations, as to render it often impossible to distinguish one from the other, save under the lens of the microscope.

Nodules, similar in their gross laryngoscopic aspect to those which have just been mentioned, sometimes remain unchanged for many months. Several examples have occurred in my own practice; the appearance depicted in the second illustration (Fig. 2) having lasted, to my knowledge, for more than three years, in the larynx of a practising attorney of this city. These certainly cannot be tubercles, except under the questionable hypothesis of their calcification.

The long-mooted question of the existence of tubercle in the larynx, seems to have been set at rest in the affirmative; and chiefly by quite recent researches of Heinze<sup>1</sup> and Eppinger.<sup>2</sup>

*Primary Tubercle.*—Pathologists acknowledge the possibility of primary infiltration of the larynx with tubercle; but they await satisfactory confirmation of the hypothesis. No record exists, to my knowledge, of detection of tubercle in the larynx of the dead subject, without abundant coexisting tubercle in the lungs. Clinical evidence of such primary deposit is presumptive rather than demonstrative. This presumptive evidence is based solely upon laryngoscopic inspection, which, in individuals in whom no physical signs of pulmonary lesion can be detected, reveals a condition of the larynx known to be more or less characteristic of tuberculous processes in that structure.

*Secondary Tubercle.*—Secondary infiltration of tubercle in the larynx is generally acknowledged to be of comparatively frequent occurrence. It takes place, as a rule, only in subjects of pulmonary tuberculosis; and, as far as my own records teach, appears much more frequently in the inherited than in the acquired variety. It is, furthermore, associated, as a rule, with secondary tuberculosis in other structures: both at a distance, *i. e.*, intestines, spleen, kidneys, etc.; and contiguous, *i. e.*, trachea, pharynx, palate, tongue, etc.

An *acute tuberculous sore throat* has been described, with considerable detail, by Isambert, Fränkel, and a few others. It is an acute miliary tuberculosis of the pharynx and larynx, which rapidly ulcerates, and terminates fatally in a few weeks, under further progress as acute tubercu-

<sup>1</sup> Die Kehlkopfschwindsucht, nach Untersuchungen im pathologischen Institute der Universität. Leipzig, 1879.

<sup>2</sup> Pathologische Anatomie des Larynx und der Trachea. Berlin, 1880.



losis of the lungs. Abundant disseminations of confluent patches of miliary tubercle have been observed beneath the epithelium, which bleeds freely when touched. These appear first upon the palate, anterior palatine folds, the tonsils, and the pharynx; and, at a later stage, upon the epiglottis and the larynx. They are exceedingly painful, so much so that deglutition is sometimes impracticable. Ulceration soon ensues, encrusting a certain number of the tubercles; and leaving empty sacs, with more or less deep losses of substance. Death occurs, usually, before extensive ravages can be produced.

Of this affection I know almost nothing personally. One example presented at the Throat Clinic of Jefferson Medical College Hospital, a few years ago, in the person of a lad, whom I had but the one opportunity of examining; and who, as I learned upon inquiry, died a few weeks afterwards.

In 1868, the larynx, from what I strongly suspect to have been a case of this kind, was presented to this Society, by Dr. Tyson,<sup>1</sup> who called attention to the fact that the ulceration began in the fauces, and that the patient, a man, 49 years of age, whom he had seen in consultation, suffered with painful deglutition to an extreme degree. The rapid progress of the disease in this instance, the intense pain on deglutition, the early ulceration in the throat, and the slight amount of laryngeal ulceration found post-mortem, tally very closely with the pathological history of the cases discriminated of late years as examples of acute tuberculosis of the throat.

*Presumptive Primary Tuberculosis.*—My entire practice has furnished me with but three personal examples of even presumptive primary tuberculosis of the larynx. In two instances it was impossible to detect evidences of pneumonic lesions for several weeks following recognition of the tuberculous larynx. The subjects were all males; aged, respectively, 29, 27, and 21 years.

In two cases, one a driver of an ice-wagon, and the other a sailor, the immediate advent of the lesion was directly attributable to severe cold; probably acute laryngitis, from extreme exposure. The third patient, a miller, had no recollection of having caught cold. Hereditary influence was denied in each case.

In the sailor, pneumonic symptoms first became discernible six weeks after the manifestation of disease in the larynx; and death occurred by apnœa within ten weeks thereafter.

In the driver of the ice-wagon, pneumonic symptoms first became discernible eighteen weeks after the manifestation of disease in the larynx; and death ensued eight weeks later. In the miller, the first pneumonic symptoms became discernible fourteen weeks (April 3, 1882) after the

<sup>1</sup> Trans. Path. Soc., Phila., vol. iii. p. 74.

disease had begun; and at last accounts he was reported as far gone in pulmonary tuberculosis.

CASE I.<sup>1</sup> (No. 17,250).—The first laryngeal lesion, recognized, was a shallow irregular ulcer on the left side of the posterior face of the pallid and thickened epiglottis. Ulceration soon attacked the right side also; then the central portion\* of the edge of the epiglottis, and subsequently its laryngeal face. Thus the epiglottis became encircled, as it were, with an ulcerating girdle, and gradually underwent destructive ulceration from above downward, till nothing but a hemorrhagic stump remained. At the autopsy it was found that the ulceration which had surrounded the epiglottis had extended into the base of the tongue, and had destroyed a portion of its substance. The ulceration on the laryngeal surface of the stump of the epiglottis was quite extensive, as was that also on the aryteno-epiglottic folds and the ventricular bands. The vocal bands were intact, as was also the whole of the subglottic mucous membrane of the larynx and of the trachea, as far as it had been removed. This is distinctly shown in the specimen, herewith presented.

Dr. Seiler kindly made a number of sections of this larynx, two of which are now under the microscope for inspection. One shows small-celled infiltration and caseous degeneration in the stump of the epiglottis; and the other exhibits infiltration with cheesy centre in the mucous membrane, and infiltration in a mucous gland.

Tubercle was abundant in both lungs in various stages of degeneration. Several small cavities were seen in the upper lobe of the left lung; but there were none in the right lung.

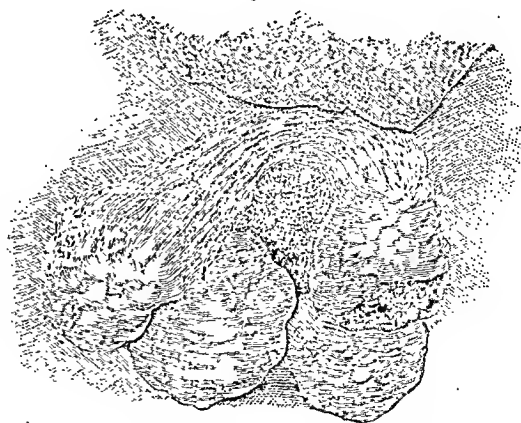
CASE II. (No. 21,110).—Geo. F., aged 29, a German, blonde, unmarried, and for fourteen years a seaman, had no record of sickness prior to six weeks before being sent to me for laryngoscopic examination. Exposed to very cold weather in the English Channel, he acquired what was probably an acute laryngitis, attended by dysphonia, dysphagia, cough and expectoration. The dysphagia increased until swallowing had become exceedingly difficult and exquisitely painful. His pain, indeed, was the principal subject of complaint.

Nutrition seemed good.

Lung capacity was of normal average. There was no sign of dyspnoea on exertion. There was slight dulness on percussion at the apex of the right lung; and bilateral exaggerated vocal resonance on auscultation posteriorly. The mucous membrane of the gums of the upper teeth was studded with tuberculous-looking elevations.

Laryngoscopy revealed (Fig. 3) almost complete ulcerative destruction of the

Fig. 3.

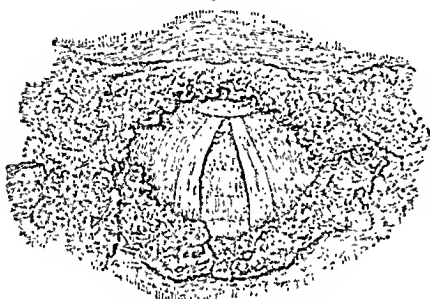


Ulcerative acute tuberculous laryngitis.

<sup>1</sup> For details with illustrations, see *Archives of Laryngology*, vol. ii. No. 2. No. CLXIX.—JAN. 1883.

right half of the epiglottis. The ulcerations extended into the glosso-epiglottic sinuses in the one direction, and into the aryteno-epiglottic fold in the other; the glosso-epiglottic ligament and aryteno-epiglottic fold being destroyed in considerable extent. The ulceration extended into the base of the tongue on that side. A few red unhealthy granulations existed at the junction of the crest of the epiglottis with its left side; ulceration existing over the whole of that side of the epiglottis, also, but much less deeply than on the right side. The left edge of the epiglottis was several times the normal thickness; and a deep oval excavated ulcer occupied its free edge. There was immense tumefaction of both supra-arytenoid eminences. The left side of the larynx was completely hidden; and the interior of the right side indistinguishable. Progressive ulceration gradually destroyed so much of the swollen epiglottis and aryteno-epiglottic folds as to fully expose the interior of the larynx to inspection (Fig. 4), when it was seen that the vocal bands were intact; as had been inferred from the character of the voice.

Fig. 4.



Progressive ulceration in acute tuberculous laryngitis.

Post-mortem examination revealed complete tuberculous infiltration of the right lung, and almost equally extensive infiltration in the left lung; only a few cubic inches in the anterior portion of the lower lobe being free from the product. The lungs contained no vomicae. There was extensive ulceration of the base of the tongue, the remnant of the epiglottis, both aryteno-epiglottic folds, and both lateral laryngeal walls almost to the edge of the ventricular bands. No macroscopic lesions were apparent on the vocal bands, or in the subglottic portion of the larynx, or in the entire trachea, or in so much of the primitive bronchi as was removed with the specimen, which is herewith presented for inspection.

In both these cases the tuberculous lesions are limited to the supra-glottic portion of the larynx, as was likewise the case at the last laryngoscopic examination of Case III., the pathological particulars of which, I shall, probably, be prepared to present to the Pathological Society at no distant date.

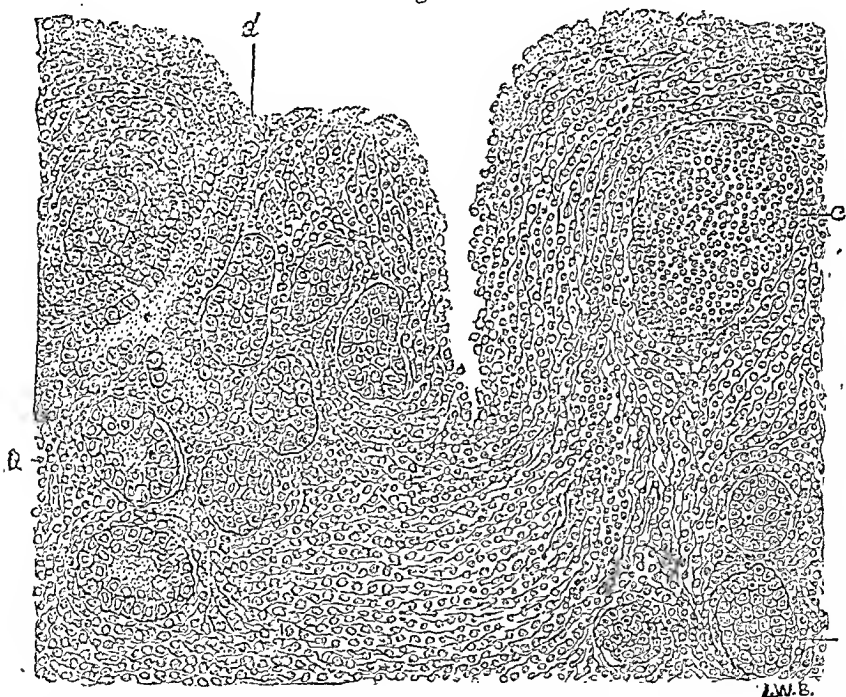
As to the etiology of these cases, we are restricted to hypotheses. There is no positive evidence of hereditation. In two, there was distinct origin in a severe cold, most probably an acute laryngitis.

In the third, there was no recollection of any special cold; but it is not improbable that the disease began as an acute or subacute laryngitis, or laryngo-bronchitis, milder in character than in the other cases. It is quite possible, further, that there may have been some slight pneumonitis accompanying the laryngitis or laryngo-bronchitis in these cases, and that the caseous foci of some of its residual products in the lung originated the tuberculization.

On the whole, therefore, I am inclined to the belief that cases of so-called primary tuberculosis of the larynx may be relegated to the category of secondary tuberculosis, commencing very early and running an unusually acute course.

*Secondary tuberculosis* of the mucous membrane of the larynx presents us with two stages: (1) that of infiltration; and (2) that of ulceration; several specimens of both of which conditions are under the microscopes before you. No tubercle is found in the epithelium; the infiltration always taking place beneath the epithelium. The infiltration is found both in the mucosa and the submucosa; in the latter, however, rarely as deeply as the situation of the mucous glands; according to some, never; but this negation is too absolute, as will be proved by several sections now under the microscope (Fig. 5). One section, through a ventricular band, exhibits

Fig. 5.



L.W.B.

Tuberculous ulceration; involvement of gland. Section through mucous membrane at base of epiglottis; *ca*, gland and its duct infiltrated with granular tubercle; *b*, acinus of gland; *c*, tubercle.  $\times 180$ .

granulation tubercle extending more and more densely in the very vicinity of the glands, everywhere infiltrating the interacinal connective tissue, and in many places so profusely infiltrating the glands as to render it difficult to tell whether a given mass is a tubercle or an infiltrated gland. In some instances, as in some of the specimens before you, the infiltrate is uniformly

disseminated through the entire thickness of the mucous membrane; but in the great majority it is found only in the upper part of the mucosa, just beneath the epithelium. Sometimes there is quite a free space (Heinze) between the epithelium and the most superficial tubercles. The overlying epithelium appears normal; and remains well attached unless ulceration has actually begun. Individual tubercles are noticed more abundantly in the upper portions of the mucosa, and more and more sparsely towards the deeper. In these portions, too, there is less granular infiltration than there is above. In the sections exhibited, the older tubercles occupy the central portion of the mucous membrane chiefly; young ones, the sub-epithelial portion. Giant cells are few in number. Advanced cases exhibit extensive caseation, both in the tubercles and in the tissue immediately contiguous; especially near the periphery.

Miliary tubercle is beautifully exemplified in one of the preparations under the microscope, from the larynx of an infant seven months of age. The section, for which I am gratefully indebted to our accomplished curator, Dr. Seiler, includes the entire circumference of the larynx directly through the glottis, and the tubercles in the field of the instrument are located in the interarytenoid fold.

Circular infiltration occurs partly outside the adventitia of the blood-vessels; but also, and to a greater extent, imbedded between its fibres. Fully formed tubercles are sometimes observed; occasionally with evidence of central caseation. The lumen of the vessels is obliterated by pressure in many places. Extensive infiltration has destroyed parts of the adventitia; but the integrity of the remaining coats of arterial vessels is usually well maintained. So likewise with the capillaries; while the more delicate tunics of the veins readily undergo destruction; mere traces remaining in some localities.

As regards the glands, to ulceration of which a tuberculous character has been so much attributed both by many clinicians and not a few pathologists: while they are not directly involved in the tuberculization as a rule, they undergo, when implicated, two processes of infiltration simultaneously.

I. *Inter-acinous*; i. e., great increase of round-cells in the interacinous connective tissue; or infiltration between the acini.

II. *Intra-acinous*; i. e., interstitial increase of round-cells; infiltration within the acini.

The interacinous infiltrations separate the individual acini, and partially compress them. During this process, or somewhat later, miliary tubercles, likewise, collect both in the connective tissue between the individual glands, and between the individual acini of individual glands. The gland-cells lining the proper membrane become detached and undergo destruction; and, as the membrane is forced inward by the external pressure exerted upon it, the diameters of the acini show their compression from globular into irregular oval, and elliptic bodies. Many acini finally

undergo partial or complete destruction, as may be, from fatty degeneration following the combined internal and external pressure. The ducts (Heinze) resist the process longer than the acini.

Fig. 6.



Miliary tubercles in inter-arytenoid fold of an infant seven months old.<sup>1</sup> a, epithelium; b, right supra-arytenoid cartilage; c, tubercles.

*Secondary tuberculosis of the larynx* occurs, according to my own clinical observations, both in an acute and in a chronic form. The acute form occurs chiefly in cases of rapidly caseating pulmonary tuberculosis, is liable to occur quite early in the disease, and has an average life of from six to eighteen months. The several varieties of the more chronic forms occur chiefly in the more languid cases commencing as localized pneumonitis, occur at a comparatively advanced stage of the disease, and last from two to four years, or even longer.

The earliest recognizable stage of the *acute* form is almost always manifested by marked *congestion* of the mucous membrane. The earliest recognizable stage of the *chronic* and much more frequent form, is almost always manifested by marked *pallor* of the mucous membrane.

*In the acute form.*—The period of the pulmonary disease at which the secondary tuberculous takes place is not uniform. In most instances,

<sup>1</sup> This specimen shows, too, the layer of squamous epithelium at the posterior wall of the larynx.

evidences of softening are indubitable when the laryngeal disease comes first under observation; but in many they are absent, or escape detection.

The intense catarrhal laryngitis of the acuter form usually subsides, in the course of from two to three weeks, into a severe chronic catarrhal laryngitis, indistinguishable, laryngoscopically, for a considerable period (perhaps as many as two to six weeks) as a malady due to specific constitutional disorder. In the course of from three to six weeks, a number of superficial ulcerations become noticeable upon the surface of the mucous membrane; most frequently upon the upper portion of the posterior surface of the epiglottis, frequently upon the inter-arytenoid fold, less frequently upon the inner face of the arytenoid or supra-arytenoid cartilages,

Fig. 7.



Multiple initial superficial ulcerations.

upon the vocal bands, or upon the ventricular bands, and other portions of the interior of the larynx (Fig. 7). These initial multiple superficial ulcerations of quasi-tuberculous origin may not be followed or succeeded by any other local manifestations characteristic of tuberculosis.

They present at first the closest physical similitude to the catarrhal epithelial erosions or aphthous ulcerations of a chronic laryngitis with especially irritating secretory products. Suspicion as to their dependence upon tuberculosis is excited by their multiple manifestation; purely catarrhal erosions being solitary, or very few in number.

The shape presented by these superficial ulcerations differs with the locality they occupy. They are roundish or ovoidal on the epiglottis, and upon the pharyngeal surface of the supra-arytenoids; elliptic or linear on the vocal bands and on the inter-arytenoid fold. This difference in configuration, being unusual in mere catarrhal erosions, is indicative of a difference in character. Catarrhal laryngitis coexists with the condition under consideration, as in several other varieties of intra-laryngeal disease; but the multiple ulcerations seem specifically due to the underlying dyscrasia, and not to the attendant catarrh.

Erosions purely catarrhal in origin may also exist, but they are not essentially part and parcel of the tuberculous malady.

These individual ulcerations gradually extend in depth and in periphery, and often coalesce. Thus they can rarely be submitted, in their initial state, to the observation of the pathological anatomist.

Erosions similar to these, however, sometimes take place from time to time as fresh manifestations in the more chronic form of the affection; and these latter forms often come under post-mortem observation; as in the specimen herewith presented.

Inferentially it may be presumed that the early erosions in the acuter forms of laryngeal tuberculosis are similar to these in their histologic pathology.

The fresh superficial ulcerations last alluded to, exhibit under the microscope a loss of substance, confined to the epithelial layer in many examples, while extending in others to the immediately subepithelial portion of the mucosa also. Portions of epithelium implicated, but not yet exfoliated, are turbid; and, at some points, partially detached.

Ulcerations extending somewhat deeper into the mucosa show different stages of cell infiltration, erosion of vessels, accumulations of detritus and fatty degeneration. But *no miliary tubercle can be detected either in the beds and edges of the ulcers, or in the tissues in their immediate vicinity.*

The broken down débris of tubercle presenting nothing characteristic, the tuberculous nature of these initial superficial ulcerations is inferred, therefore, from the fact that they are rarely observed apart from subsequent undoubted tuberculous manifestations in different portions of the laryngeal mucous membrane. If this inference be justifiable, it should be admitted that tuberculous ulceration may occur independently of direct tuberculous infiltration *in situ*; in which case they might probably be accounted for by so great a constitutional proclivity to tuberculous degeneration as to favour ulceration as a result of local irritation of almost any kind. Should this view of the subject be unsatisfactory, we would be obliged to regard these ulcerations as non-tuberculous in character; or to acknowledge the probability of an actual infiltration with tubercle, and its rapid destruction and discharge. Later in the disease, when these ulcerations have extended in depth and in periphery, or by coalescence, their positive tuberculous character becomes manifest; as is evident, after death, by the detection of secondary miliary tuberculosis in parts immediately contiguous.

As previously intimated, it is both a matter of doubt and of dispute, whether these shallow ulcerations are preceded by miliary tubercle. They come to the notice of the laryngoscopist, as a rule, only after the disease has made such progress as to have rendered an examination almost a matter of necessity; and he misses the pre-existent lesion.

In this connection it will be useful to mention an instance in which Prof. Schnitzler of the Vienna University claims to have had an opportunity, and the only one he has had, to watch the development of shallow ulcerations from miliary tubercles.<sup>1</sup> It is the most useful instance that I have come across in my reading; although fully as authoritative assertions have been made by others as to having encountered cases in which they could detect the miliary tubercles laryngoscopically. These opportunities are so

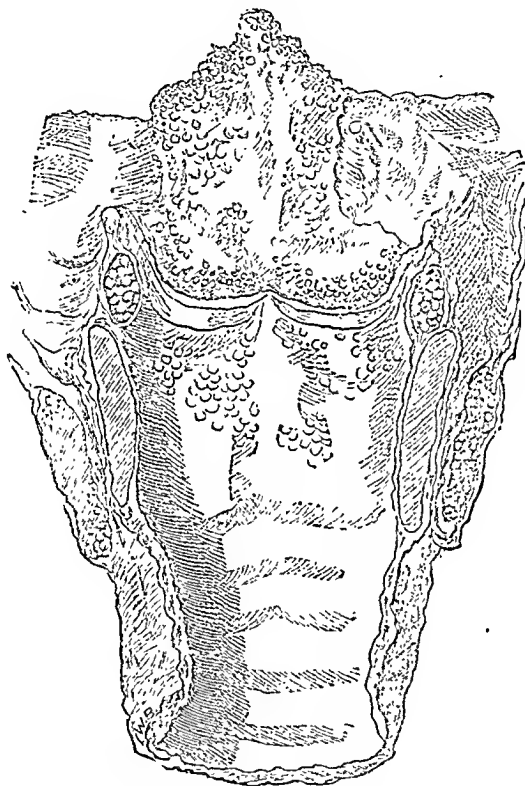
<sup>1</sup> Zur Kenntniss der Miliartuberkulose des Kehlkopfes und des Rachens, Wien, 1881.



rare, however, that Tuerek never reported more than one in his famous clinical collection; and Stoerek, of Vienna, now the oldest living laryngologist, has reported but one from his extensive experience.

As for myself, I have never been able to detect tubercle laryngoscopically; not even in the case of the preparation which I present, in which ample evidence of tuberculous infiltration was visible macroscopically in the well washed specimen (Fig. 8).

Fig. 8.



Tuberculous infiltration of larynx.

To resume the clinical pathology of laryngeal tuberculosis, it is to be remarked that subsequent laryngeal manifestations of local tuberculosis may be moderate or severe. As a rule, some characteristic circumscribed tumefactions attract notice not many days after the advent of these shallow ulcerations, and while they are increasing in depth and in periphery and by coalescence. Similar characteristic changes are manifested in some instances previously to any ulceration of the mucous membrane whatever. They take place at almost any stage of the malady; and they may remain the sole visible manifestation of the tuberculosis. These circumscribed tumefactions are chiefly thickenings of tissue, and are observed at various points of the structures.

The intumescence occurs chiefly in the mucous membrane of the epiglottis, ventricular bands and vocal bands; and less often in the inter-arytenoid fold and aryteno-epiglottic folds; in the last named structures, perhaps, less frequently than in any others; presenting, in this respect, a marked contrast to the more chronic form of laryngeal tuberculosis, in which these selfsame aryteno-epiglottic folds are much more frequently involved than any of the other tissues.

The epiglottis undergoes tumefaction on its posterior aspect, to several times its normal thickness; its functions as an obturator to the larynx in deglutition being thereby impeded.

The ventricular bands thicken so as to overlap the vocal bands to a considerable extent; and even to conceal them from view in some instances.

The vocal bands become thickened into veritable *vocal cords* indeed; and their inferior aspect becomes tumefied; sometimes to such an extent, that, as in a specimen exhibited by me before the society,<sup>1</sup> some years ago, for the purpose of demonstrating the fact, they are transformed into thick, bulky, tumour-like folds, absolutely larger than the ventricular bands themselves.

When these tumefactions are multiple or bilateral, as often occurs, their encroachment upon the calibre of the larynx is in some instances so great as to produce a veritable stenosis, threatening asphyxia, and sometimes requiring tracheotomy.

Not only do these tumefactions occur with the ulcerations just discussed; but they also accompany other intra-laryngeal tuberculous processes. They may also take place without previous ulcerations or other visible manifestations of tuberculous disease.

The swollen mucous membrane becomes irregularly tumid, acquires a pallid yellowish-gray or gray colour, as is observed in the early stage of the more chronic form, looks sodden and corrugated, and often supports a dingy yellowish pultaceous deposit.

Under the microscope, these swellings are found to be due to copious infiltration of small (lymphoid) cells from immediately beneath the epithelium inwards, both in the mucosa and in the sub-mucous connective tissue; massed here and there into tubercle nodules or groups of miliary tubercle, some of them undergoing central caseation. They extend from the epithelial layer as far as the glandular structure; the older tubercles being usually the deeper-seated ones. The glands, as a while ago stated, are not often themselves infiltrated, but the infiltration is usually massed around them and between their individual acini, which are thus compressed out of shape and subjected to fatty degeneration from pressure.

When the epithelium becomes detached, hemorrhagic ulcerations are thus exposed, of undoubted tuberculous character. These ulcers rapidly

<sup>1</sup> Trans. Path. Society, Phila., vol. v. p. 83.

extend in the most irregular manner; so that large portions of tissue are soon included in their ravages. Their edges are well defined and often slightly hemorrhagic or injected; their beds are rough and irregularly mamellonated, and usually covered with caseous detritus. The ulcers deepen and deepen in convergent outlines; or undermine the surrounding tissue at different points of their periphery. They extend to the ultimate limits of the cell infiltration, and may thus lay bare the very perichondrium—the first structure that seems fashioned to resist actual tuberculization.

Submitted to the microscope these ulcerations usually present one of three conditions:—

I. No evidence of tubercle in either bed or edge of the ulcer, but infiltration of granular tubercle in immediate contiguity to the ulcer, or but a short distance from it;

II. Either infiltration of granular tubercle, or nodular tubercle in edges or bed, or both, without either contiguous or distant infiltration; and,

III. and most frequently, tubercle in the edges and bed of the ulcer, associated with granular tubercle-infiltration, whether contiguous only, or copiously disseminated throughout the mucous membrane.

As the disease progresses, nearly the whole interior of the larynx becomes involved. The tissues, generally, become so swollen that all the sharp outlines (edges of ary-epiglottic folds, vocal bands) become lost in thick welts. Later, as the ulceration extends, the whole structure becomes transformed into an irregular, excoriated, ulcerating, almost fungoid mass. Especially is this marked in the epiglottis and vocal bands; the latter, by fissure-like longitudinal ulcerations, becoming converted into a series of bands.

In many instances, local suppurative centres of inflammation become established in the immediate contiguity of these ulcerations, and, as they reach the perichondrium, involve that structure also, so that the cartilage becomes exposed.

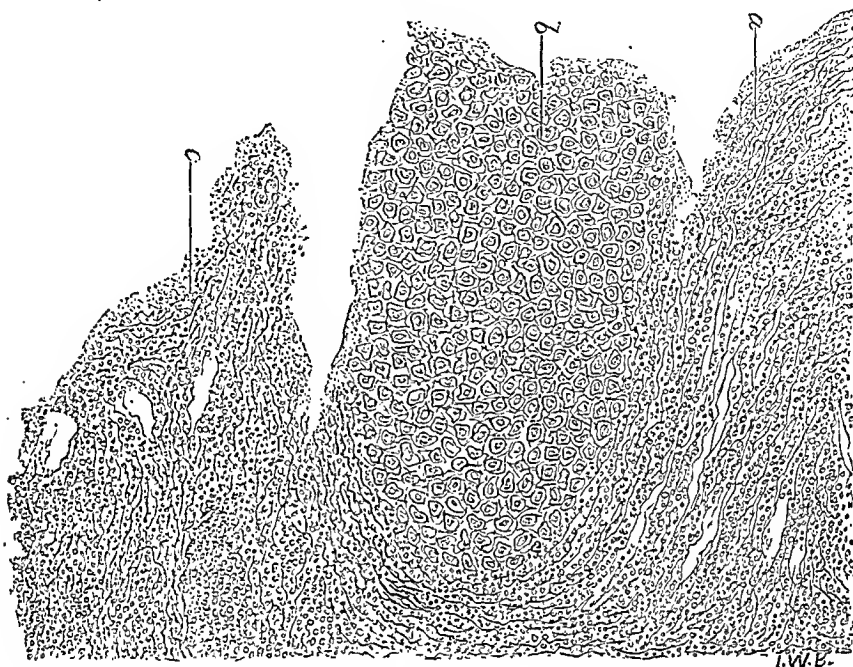
The cartilage, too, becomes attacked, and undergoes destruction, in débris, as is most usual with the epiglottis (Fig. 9), or in fragments and in mass, as with the vocal processes, arytenoids and supra-arytenoids, and even the cricoid; or in large plates, as with the cricoid and thyroid cartilages. These fragments are often discharged by expectoration; the posterior vocal processes, and even the entire arytenoid cartilages, being, at times, exfoliated in mass. In the dead body, such fragments, or detached cartilages, are often seen loose in the abscess which surrounds them.

The epiglottis is sometimes destroyed in its entire free portion, by progressive ulceration from above downward, so that a mere deformed stump remains; occasionally the destruction is by progressive ulceration from the side.

The similitude of the laryngeal pictures of this variety of laryngeal

tuberculosis, to those presented in presumptive primary laryngeal tuberculosis, indicate to my mind such similitude in character that the latter may be regarded as acuter examples of the former. Both occur in cases

Fig. 9.



Tip of epiglottis, showing tuberculous ulceration and necrosis of cartilage,  $\times 60$ . Section cut by Dr. Formad.

of rapid pulmonary tuberculosis; both become associated with secondary tuberculosis of the trachea, pharynx, palate, tongue, lips, and other structures; both progress without interruptions.

*The chronic form* of tuberculosis of the larynx is not ushered in by congestion following distinct history of exposure, as in the acuter form just described; but it is characterized by well-marked pallor of the mucous membrane; a pallor participated in, in many instances, by the mucous membrane of the pharynx and mouth. This anæmia is often apparent long in advance of similar evidence of impairment of nutrition elsewhere.

Although somewhat characteristic, and strongly suggestive of constitutional tuberculosis, this appearance is not peculiar to the tuberculous larynx only. In many cases, congestion ensues at a later period of the disease; as a result of the irritation produced by the tuberculous process;—but in many, the pallid hue continues to the very last.

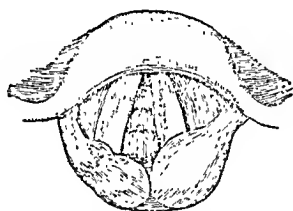
Accompanying this local anæmia, there is an irregular vascularity of portions of the mucous membrane, which, in localities where its connections are loose (inter-arytenoid fold, ventricular bands), is elevated here

and there in irregular wrinkled ridges or welts, red or gray in colour, often of a distinctly villous aspect.

Some instances present spots of ecchymoses, or little irregular varices, irregularly located on the laryngeal surface of the epiglottis, or on points in the interior of the larynx proper. There is often a general tumid condition of the mucous membrane; but this is by far a less frequent condition than circumscribed tumefactions of a peculiar character.

I. The most frequent locality of tumefaction is in the tissue inclosing the supra-arytenoid cartilages and the apices of the arytenoid cartilages; the least frequent point of intumescence in the acute variety. These tissues, for the intumescence is most frequently bilateral, undergo gradual transformation into pale, tumid, club-shaped, and finally distinctly pyriform or irregularly globose tumours, gradually tapering off, stem-like, toward the epiglottic extremity of the aryteno-epiglottic fold; with obliteration of all evidences of demarcation between the edge of the fold and the peculiar outline of the cartilages of Wrisberg and Santorini (Figs. 10, 11), and the intervening tissue.

Fig. 10.



Supra-arytenoid pyriform intumescence, at an early stage.

Fig. 11.



Supra-arytenoid pyriform intumescence at a later stage; with thickening in the epiglottis likewise.

Although most frequently pale in colour, these pyriform tumefactions sometimes become very much injected; sometimes intensely so; in exceptional cases, to actual lividity at the points where they press against each other in the movements of phonation and deglutition.

The tumefaction, if unilateral, or the greater of the two, if bilateral, is, according to my own experience, almost always situated on that side of the body corresponding to the lung more advanced in disease. This peculiar pyriform aspect of the aryteno-epiglottic fold is sufficiently characteristic of coexistent pulmonary phthisis to establish the diagnosis. It occurs chiefly in slow cases, commencing with a localized pneumonitis; and is noticeable at a comparatively advanced period of the first stage of the disease.

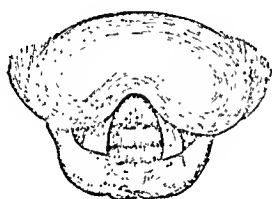
It is a hyperplasia due to extensive proliferation of lymphoid cells in the adenoid tissue normally very abundant in this structure.<sup>1</sup> The

<sup>1</sup> Wagner, Das tuberkelähnliche Lymphadenom. Leipzig, 1870-1.

increase of thickness of the mucous membrane is often three- or fourfold; so that it not infrequently measures fully one centimetre. Later in the disease, both granular and miliary tubercle are found. These swellings, as I have seen them, never subside, except in such partial measure as they may have been due to effusion of serum or other products, as a result of the inflammatory process, set up mechanically by pressure, or by irritation. They are distinct from the slight serous œdema which sometimes accompanies protracted subacute laryngitis, with which they are occasionally confounded.

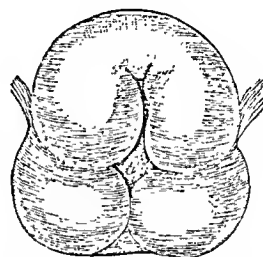
II. In another group of cases the epiglottis undergoes great thickening of its free surface, from tuberculous infiltration, into a tumid ridge of turban-shape (Fig. 12); its edge often presenting as a thick crescentic

Fig. 12.



Turban-like thickening of the epiglottis.

Fig. 13.



Crescentically swollen epiglottis overhanging the orifice of the larynx.

cushion or pad, in some instances overhanging the laryngeal orifice so as to conceal all the tissues from view, save, perhaps, the pyramidal intumescence of the supra-arytenoid cartilages (Fig. 13).

This may be associated with previously existing pyriform tumefaction of the supra-arytenoid and aryteno-epiglottic structures; or it may exist independently of any such manifestation at the time or at any subsequent period.

Ulceration usually begins superficially upon the laryngeal face near the edges, and gradually extends in depth and periphery. In most instances, progressive destruction takes place from above, until nothing but an irregular stump remains; but sometimes it proceeds from the side inwards, as admirably shown in the drawings exhibited.

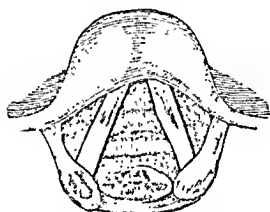
As ulceration reaches the petiolus, it spreads along the commissure of the vocal bands into the ventricles, and along the ventricular bands.

Ulceration limited to the epiglottis is exceedingly infrequent, and is seen chiefly, if not only, in subjects who succumb rather early to the general malady. Ulceration of the anterior or lingual face of the epiglottis is unusual, and is almost always an extension of ulceration from the posterior face along the free edge. In one of the specimens under the microscope, however, the lingual face of the epiglottis is equally with the laryngeal face beset with tubercle infiltration.

III. Still another group of cases may be classified in which the epiglottis is flaccid instead of rigid; and in which the peculiar manifestations begin on the posterior portion of the larynx, and chiefly on the inner surfaces of the meso-arytenoid fold—a point of tissue which almost invariably suffers likewise in cases which have begun with other manifestations.

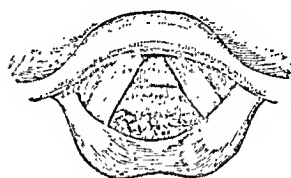
This fold of tissue becomes red, its normal surface interrupted, irregularly tumid in projections which often increase in size until they simulate polypoid excrescences, condylomatous (Fig. 14) or acuminate (Fig. 15). Under the microscope, granular and nodular tubercles are found

Fig. 14.



Condylomatous inter-arytenoid infiltration;  
colour normal; softening right apex.

Fig. 15.



Accuminated inter-arytenoid infiltration;  
condensation right apex; red right vocal  
band; thick and irregular vocal bands.

beneath the epithelium. Small superficial ulcerations soon appear in this fold, or upon these projections of the mucous membrane. These ulcerations increase in periphery, coalesce, and become covered with yellowish, grayish detritus, which, when wiped off with a brush or sponge, or subjected to a douche or spray, reveal an irregular and slightly hemorrhagic surface; the ulcer having bled freely, though slightly, on contact with the cleansing substance. The surface is almost constantly covered with a thin layer of the products of secretion and disintegration.

In all these varieties of secondary tuberculosis of the larynx the normal colour of the vocal bands is retained in most cases. In some they are injected, sometimes deeply, and in occasional instances are hemorrhagic on some points of their surface. But in almost every case the peculiar polish of the surface, which presents such a remarkable appearance in health, is lost, and their aspect is dull.

In other cases, while the general surface of the vocal bands is congested, there are opalescent patches, dingy white in aspect, and more or less irregularly parallelogramic in configuration; probably groups of turbid pavement epithelia. Sometimes the smooth surface is interrupted by projections resembling excessive granulations. Ulceration takes place at the outer margins or edges of the vocal bands usually, and they become irregular in outline (Fig. 16); sometimes by small losses of substance, looking as though removed by a punch; sometimes in a jagged or more or less serrated edge.

The breadth of the band is thus actually diminished at the points where ulceration exists, and often looks still more attenuated in consequence of the overhanging of the ventricular band. These ulcerations are most frequently seen at or towards the posterior extremities of the structures. Should the vocal band give way in great extent, as occasionally happens, retraction occurs in the fragments; and the shape of the glottis becomes, in consequence, very irregular. Should it give way at the posterior vocal process, that structure will be apt to project across the glottis.

Fungous vegetations are sometimes developed upon the ulcerated edges of the vocal bands; and these sometimes produce adhesions at the anterior portion of the bands.

Collections of tubercle within diffuse tuberculous infiltration is rarely observed in the mucous membrane of the vocal bands. It is infrequent also in the elastic fibrous tissue, in the muscular substance, or between the muscular fibres (Heinze).

IV. Still a series of cases may be differentiated in which the principal lesions are located in the vocal bands themselves.

The posterior surfaces of the vocal bands undergo great intumescence, so that they project beyond the vibrating edge of the band, and encroach seriously upon the calibre of the larynx. The dyspnoea from this stenotic condition is often sufficiently intense to threaten asphyxia, and only to be alleviated by tracheotomy.

Ulceration usually takes place in the longitudinal direction of the bands and the irregular appearance is quite suggestive of laryngeal neoplasms.

Tubercle is infrequent either in the muscular substance of the vocal band or between the muscular fibres.

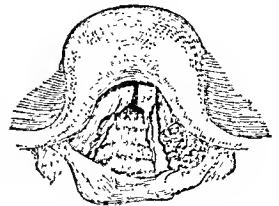
Pyriform intumescence of the posterior portions of the aryteno-epiglottic folds has, in my practice, been far more frequent in young adults than in those in middle life; but I have seen the condition in patients as old as fifty-six.

Patients above fifty years of age are much more apt to exhibit, in my experience, torpid ulceration, with imperfect granulations, on the inner aspect of the mucous membrane over the supra-arytenoid and arytenoid cartilages; and most of the cases I have seen have exhibited both the ulceration and the pulmonary softening on the left side.

Perichondritis and chondritis, which usually attend the later stages of the malady in prolonged cases, are to be regarded as inflammatory processes of septic origin due to the tuberculosis; and not as tuberculous processes proper. Tubercle is rarely found close to the perichondrium; the infiltration, as has been stated, being chiefly in the upper part of the mucosa.

These processes may be limited in extent, be confined to one surface; or

Fig. 16.



Ulcerated vocal bands and ventricular bands, cavity left apex; solidification of right apex.



they may be extensive and involve the entire surface, leading to proportionate destruction of tissue. But the processes themselves are by no means always proportionate to the intensity of the tuberculous process which has excited them.

Abscesses often result from the perichondritis, and usually point inwards towards the free surface of the larynx. They are liable to be productive of suffocative phenomena. Their incision and discharge, when practicable, usually relieves the threatening asphyxia, which, under other circumstances, may compel resort to tracheotomy.

After intra-laryngeal discharge of the abscess, spontaneous or artificial, fragments of cartilage are sometimes seen projecting into the free lumen of the larynx. This takes place most frequently with the posterior vocal processes, the arytenoid and supra-arytenoid cartilages, and much less frequently with the cricoid cartilage.

Tuberculous ulcers rarely heal. Exceptional cases of cure are occasionally noticed, but it becomes questionable whether those instances have been examples of actual tuberculous ulceration; and the conservation of the patient's life prevents an accurate answer to the query, for verification is possible only under microscopic inspection.

A disposition to heal is sometimes manifested by the appearance of healthy looking granulations upon the bed of the ulcer; but ere long the tuberculous infiltration occurs in the new-formed tissue which speedily succumbs to the invasion. Exuberant granulations are often developed in these ulcers, and even proliferate at times into veritable tumours or vegetations, which sometimes require removal to clear the air-passages from obstruction to respiration.

In cases of pulmonary tuberculosis following as a sequel to caseous pneumonia, the general vitality of the tissues is impaired to such a degree that even follicular ulcerations of the larynx are insusceptible of cure.

The percentage of cases of pulmonary tuberculosis in which the larynx undergoes tuberculization has not been approximatively estimated; but it is probably not very large, and is much greater in hospital than in private practice. Heinze's personal pathological investigations yielded a percentage of 6.5. Men are more liable than women, in the proportion of nearly three to one; probably as the result of their greater exposure to inclement weather.

As mentioned earlier, the disease appears to be more frequently encountered in inherited than in acquired pulmonary tuberculosis.

The period at which tuberculization of the larynx occurs is variable, but as a rule the disease in the lungs is more advanced than in the larynx. If tuberculous ulceration has taken place in the larynx, cavities are almost always to be found in the lungs.

Inherited or acquired tendency to catarrhal inflammations of mucous membranes, especially to inflammations of the mucous membranes of the aerial tract, seems to be a causal factor in the development of tuberculosis

of the larynx. Inheritance, in my experience, has seemed to be an important factor.

The tuberculous process itself seems to be an inflammatory process attended with profuse cell-proliferation, in tissues abundantly supplied with blood and lymph channels; the proliferation being too profuse for absorption, and undergoing maceration or decay.

Some acute observations of Dr. Formad appear to indicate an anatomical reason for the development of tubercle in certain subjects, and I trust that he will present these views to us this evening. Suffice it now to say, that he finds the lymph spaces extremely small in those animals most readily tuberculized, and likewise in the tuberculized subjects of the human species, and in tuberculous subjects only.

During the last three years I have, as opportunity permitted, examined the blood of many of my cases of tuberculosis of lungs and larynx. While often failing to encounter any appearance at all peculiar, I have so frequently observed a condition which has not been noticed in my examinations of blood in connection with other disease, that it seems to me to have some very close relation with tuberculosis. In all the cases with a temperature exceeding 100° F., this condition was almost sure to be found, and was rarely encountered at a lower body temperature.

In the first place, the proportionate number of white corpuscles is much diminished; secondly, the red corpuscles have a great tendency to become massed; and, thirdly and chiefly, plugs of granular matter become caught here and there between the individual members of certain groups of red corpuscles.

These granules look like granules which may have escaped from the white corpuscles, perhaps by dissolution of the protoplasm; and this of course would account for the paucity of the white corpuscles.

Clinicians have been too much inclined to regard the morbid manifestations which have been under consideration, as pathological processes remotely due to tuberculosis, but not in themselves tuberculous nor confined to tuberculosis.

Pathologists, with but few notable exceptions, view them as specific results of tubercle, the direct outcome of tuberculization, and not the mere result of irritation occurring in tuberculosis. The tenor of these remarks would indicate the greater confidence in the latter opinion.

NOTE.—Every point touched upon in the foregoing paper was amply illustrated by specimens, microscopic sections, and drawings. The various sections under the microscope were prepared by Drs. Longstreth, Seiler, and Formad, from three of the specimens exhibited; and they represented tubercle infiltration in the various component tissues of the larynx. The camera-lucida drawings, which are as beautiful as the preparations themselves, were made by Dr. Blackburn, under the immediate supervision of Dr. Formad. Without the assistance of the gentlemen named, it would have been impossible for the writer to have made his demonstrations so satisfactorily.

## ARTICLE XIV

POST-MORTEM DISSECTION OF THE REGION OF THE CLAVICLE, THIS BONE HAVING BEEN REMOVED FOR OSTEO-SARCOMA BY DR. VALENTINE MOTT, OF NEW YORK, IN 1828, WHEN THE SUBJECT WAS IN HIS 19TH YEAR, AND 54 YEARS BEFORE HIS DEATH.<sup>1</sup> By F. PEYRE PORCHER, M.D., Prof. of Materia Medica and Therapeutics, and formerly of Clinical Medicine in the Medical College of the State of South Carolina, Charleston.

REV. WM. B. YATES died in this city July 13, 1882, and having attended him for many months during his last illness, in consultation with his son, Dr. Joseph Yates, the latter, on account of the interest attaching to the surgical history of his father, very kindly invited me to make a post-mortem examination for publication. This gentleman, as is generally known, was the subject of what was long considered a very notable operation by Dr. Mott, what this famous surgeon was in the habit of styling his "Waterloo operation," namely that for the removal of the left clavicle.

Mr. Erichsen (*Science and Art of Surgery*, vol. ii.) says:—

"But when, in consequence of the growth of tumours, the removal of the entire or greater part of the bone is required, the operation is one of the most hazardous in surgery, as a glance at the anatomy of the parts lying beneath the bone, and encroached upon by the morbid growth will indicate. In 1828 Mott excised the clavicle for an osteo-sarcoma which measured four inches in diameter. This operation was one of great difficulty; it occupied four hours in its performance, and forty ligatures were required to restrain the hemorrhage. The subclavian vein, thoracic duct, and phrenic nerve were exposed, but the patient made a good recovery, and was alive many years after the operation had been performed."

M. Malgaigne, in his *Manuel de Médecine Opératoire*, p. 234, makes but four references in his section on "Resections of the Clavicle." Velpeau and himself each removed the scapular extremity, Davie of England, the sternal, and Mott's case, which he refers to as "*Extraction complète de l'os.*" The same author, whilst describing the surgical anatomy of the parts (*Traité d'anatomie chirurgicale*, tome deuxième, p. 386), says: "*Mais en arrière, les dangers seraient graves et multipliés sous le couteau qui voudrait raser la clavicle.*"

M. Velpeau says (see *Operative Surgery*, translated by Townsend, vol. ii. p. 806):—

"The clavicle, it is true, is situated very superficially, but as it rests posteriorly and below against organs, the wounding of which would be extremely dangerous, surgeons have scarcely dared to undertake its excision. Nevertheless, circumstances may occur, and these frequently, which seem to demand this operation, unless we wish to abandon the patient to certain death. . . . When the bone is in a state of disease, this operation must be one of the most difficult in surgery. Notwithstanding which it was performed with entire success by M. Mott. . . . The patient in whom M. Warren (*On Tumours*, etc., p. 148) had removed the clavicle by means of a crucial incision died a month after. M.

<sup>1</sup> Read by request before the Medical Society of South Carolina, Sept. 1, 1882.

Travers (*Source des Connais. Méd.*, 1838), on the contrary, who in a young girl, aged ten years, extirpated the clavicle entire with the exception of its sternal head, states that he effected the cure of his patient. M. Roux, who also performed the same operation, leaving behind only the inner extremity of the bone, informs me that he was equally fortunate. In conclusion, it would seem, upon the whole, that the quadrangular flap which I have spoken of, would render the operation easier than by the different incisions of M. Mott."

Dr. Mott in his own "Account of a case of osteo-sarcoma of the left clavicle, in which exsection of that bone was successfully performed" (*Am. Journ. Med. Sciences*, 1828, vol. iii. p. 100), states "that the operation was without a precedent," and, to quote his own words—

"Far surpassed in tediousness, difficulty, and danger, anything which I have ever witnessed or performed. It is impossible for any description which we are capable of giving, to convey an accurate idea of its formidable nature."

Adding :—

"To the extraordinary composure of mind which our patient manifested is to be attributed in a great measure his undisturbed and speedy recovery."

He was "for near four hours under the knife," and be it remembered, without chloroform.

The health of Mr. Yates during the entire period since the operation has been excellent, and he led a very active life till a few years since when it began to fail, and he suffered from some of the evidences of *tabes dorsalis*, impaired power of locomotion, and extreme nervousness for which I frequently advised with him. There was never any cause of suffering referable to the clavicular region. He had always, since recovering from the operation, the complete use of the left arm. There were present at the autopsy my friends, Drs. Yates, Middleton Michel, and F. L. Parker (Professors of Physiology and Anatomy in the Medical College of this State), and my son Dr. W. P. Porcher. I take this occasion to thank Dr. Michel for the very skilful manner with which he performed the dissection, and whilst Dr. Mott's history of his operation was read by one of the assistants, the following notes were taken at the bedside :—

*External Appearance.*—The acromial end of the clavicle about one and two-third inches from its connection with the shoulder-joint, was very prominent and could be felt by the finger so that it was evident that the entire bone had not been removed. A cicatrix two inches in length, with a corresponding depression was seen over the clavicular space midway between its sternal and acromial ends; crossing this at right angles, there were cicatricial marks, and some puckering of the skin, reaching from a point three inches below the original seat of the bone nearly to the left ear indicating the lines of incision.

*Dissection.*—An incision seven inches in length was made below and parallel with the former site of the clavicle, and another of the same length extending up the neck, subsequently this was prolonged downwards over the deltoid, so as to enable us to see all the parts involved. The skin and fascia with the adipose tissue were carefully dissected out. The subclavian vein was found to be uninjured and patulous. The remains of two branches of the subclavian artery were discovered to have been cut. The sterno-hyoid,

the omo-hyoid, the anterior scalenus muscles were dissected out, also the sterno-mastoid, the clavicular portions of which were entirely wanting, though its sternal attachments remained. The space occupied by that portion of the clavicle removed was found to be replaced by an adventitious ligamentous band, two inches in length, and half an inch wide, extending from the acromial end of the clavicle to the manubrium sterni. The clavicular portion of the pectoralis major lower down, which had been divided in Mott's operation, was also found to be replaced by a broad band of ligamentous tissue connecting it with the deltoid. This provision in both cases, seemed to have been one of nature to supply the loss of bone and to support and give power to the arm.

The acromial end of the clavicle, which had not been removed, measured one and three-quarter inch in length, and has with its ligamentous band been preserved by Prof. Michel.

The remains of some incised arteries in the supra- and infra-clavicular spaces were discoverable.

It is not necessary to cite the cases of excision of the clavicle since the time of Mott, as this subject is discussed by many surgeons, notably by Travers, Velpeau, Chassaignac, Syme, Warren, Gross, and others, and by Otis in his Surgical History of the recent war; but I will content myself with a single reference, namely to the number for May, 1864, of *The Confederate States Medical and Surgical Journal*, p. 78, which contains a report little known of the successful removal of two-thirds of the clavicle for osteo-sarcoma, by the late Chas. Bell Gibson, then of Richmond, Va.

## REVIEWS.

ART. XV.—*On Ovarian and Uterine Tumours, their Diagnosis and Treatment.* By T. SPENCER WELLS, Vice-President of the College of Surgeons of England, etc. 8vo. pp. xxx., 530. Philadelphia: P. Blakiston, Son & Co., 1882.

MR. SPENCER WELLS has, with this volume, presented the public three books<sup>1</sup> upon the subject of ovariectomy. These works represent the practical origin, the struggles and final triumph of this operation. If these volumes were from the pen of any other author, and upon any other subject, the reviewer would be justified in classing them as revised editions of the same work. Contrary to the usual custom, they have been received and were entitled to the honour of separate places in the bibliography of the subject. These books have marked the epochs in the history of ovariectomy. In 1865, recent as this date seems to us, the first volume was upon the border-land of doubtful surgery. It here and there, and in high quarters, met with honest and out-spoken disapproval; it was yet a question of diagnosis, of methods, and expediency. The second volume was within the domain of legitimate science and art; while the third and last is a pean of victory, and the proclamation of sovereignty over a broad and fruitful realm.

The history of ovariectomy ought to teach the surgery of the future humility as its first lesson; and of the past it must never be forgotten that whatever of defeat and obloquy it encountered was due to it. This older surgery was one of traditions. Its limits were defined by authority, its methods were settled by command, and it had no place within its borders for whatever violated its dogmas. One of its most cherished dogmas was the sanctity of the peritoneum and the inviolability of the great cavities. Whatever the older surgery taught about these things was tradition not fact, and tradition it remained until the creation of a new science and art called ovariotomy. Nothing can be stronger than the contrast between the present attitude of general surgery toward ovariectomy and that held twenty-five years ago. Whatever at the present day is proposed, or attempted, in abdominal and pelvic surgery is received with plaudits, and finds a score of hands to essay its difficulties. This influence is really not limited to abdominal surgery; its impetus is felt throughout the field, and many a triumph has been scored under the moral stimulus of ovariectomy.

It will be interesting to glance at the state of the literature of ovariectomy just previous to the appearance of Mr. Wells's first book. His first noteworthy effort before the public was in the *Dublin Quarterly Journal*, 1859, and in a pamphlet edition of the article. This marked Mr. Wells as the ovariotomist of the future, and from that date his rise was rapid.

<sup>1</sup> Diseases of the Ovaries, their Diagnosis and Treatment. London, 1865. The same, London and New York, 1873.

But two noteworthy events in the literature of the subject had occurred previous to that date, one was the paper and table of Atlee (W. L.) in this JOURNAL, of April, 1845, and the other was Dr. Lyman's Prize Essay in the *Transactions of the Massachusetts Medical Society*, 1856. These two papers produced a marked impression, and by giving results instead of doubtful methods, served to break down the prejudices that interfered with the development of the operation. Atlee's was the first extensive table submitted to the profession. So useful were his labours that Mr. T. S. Lee<sup>1</sup> did not hesitate to build up his own reputation by appropriating Dr. Atlee's work without any credit, and so limited was the diffusion of medical literature at that time that the piracy was scarcely known. Kiwisch allowed himself to copy Lee, and with a happy disregard for literary ownership failed either to credit Mr. Lee, or to suspect that the authorship laid elsewhere.<sup>2</sup> It is interesting to observe how the moral atmosphere of ovariectomy has cleared, so to speak, since the publication of Atlee's table.

As we glance over it it seems like reading the roll of worthies which has lain under the dust of ages. Past time cannot, in its moral sense, be expressed in years. It is made near to us, or far from us, by the events which it records. It is near to us if the years are not seared by strong lines which mark progress and development. One event may rend the near past so far from the present that the interval has the effect of centuries. Ten years before the perfection of the steam engine and telegraph cannot be expressed as a measure of time. One feels how rapidly history is made in events, not years, by reading this table of Atlee's. One-fifth of the ovariectomies to 1846 were made by C. Clay, Dr. Bird, and Mr. Lane. These surgeons may be termed the ovariectomists of the first period. Many names appear honoured in everything but ovariectomy, Mr. Lizars, B. Cooper, Mr. West, Mr. Heath and Mr. Walne, Mr. Salle, and Cæsar Hawkins, all tried their fortunes as ovariectomists and were content to surrender whatever honour might be in store for them in this branch of surgery. A strange feature is the number of operators who were either anonymous or disguised themselves under initials. Think of a writer being now afraid to acknowledge an ovariectomy!

Dr. Hamilton<sup>3</sup> and Simons<sup>4</sup> published valuable and complete histories that gave evidence of painstaking and careful work, all the more valuable as material for history from their local character. Dr. Bradford<sup>5</sup> and Dr. McRuer<sup>6</sup> contributed local histories. Dr. C. Clay<sup>7</sup> gave a report of his individual experience, and Dr. Robert Lee<sup>8</sup> gave a small volume to the subject, but of a size out of proportion to its value. Mr. B. Phillips,<sup>9</sup> Dr. Churchill,<sup>10</sup> Dr. Jefferson,<sup>11</sup> Dr. Cormack,<sup>12</sup> Dr. Hocks,<sup>13</sup> and Dr. Franques<sup>14</sup>

<sup>1</sup> Tumours of the Uterus and its Appendages. London, 1847, p. 264.

<sup>2</sup> Kiwisch, Diseases of the Ovaries. Translated by John Clay, London, 1860. Appendix, p. iii.

<sup>3</sup> Report of cases occurring in Ohio, Ohio Med. and Surg. Journal, Nov. 1859, p. 21.

<sup>4</sup> Scanzoni's Beiträge z. Geburtskunde u. Gynækol. 1858, p. 10.

<sup>5</sup> Report of cases occurring in Kentucky. Pamphlet.

<sup>6</sup> Report of cases occurring in the State of Maine (Clay).

<sup>7</sup> Result of Ovariectomy, Manchester, 1848.

<sup>8</sup> On Ovarian and Uterine Disease, London, 1853.

<sup>9</sup> Medico-Chirg. Trans., Lond. 1844, p. 468.

<sup>10</sup> Dublin Jour. of Med. Sci., July, 1844.

<sup>11</sup> Lond. and Med. Gaz., Sept. 1844.

<sup>12</sup> Lond. and Edinb. Monthly Jour., May, 1845.

<sup>13</sup> Monatschrift f. Geburtskunde, 1856, p. 370.

<sup>14</sup> Beiträge z. Geburtsk. u. Gynæk., 1860, p. 211.

added to McDowell's well-known report, and Bouchet,<sup>1</sup> with the review in the *British and Foreign Med.-Chirurg. Review*, for October, 1843, and we have every noteworthy literary event in the history of ovariotomy up to the time of the Kiwisch-Clay memoir, 1860. For the first elaborate treatise upon the subject it may be seen that Mr. Wells had before him only virgin soil. It was this meagre array of published material compared to the present vast literature of ovariotomy, that carries the mind of the reader back to a remoter period than the few years warrant, and that brings to one a sense of living faster and longer, from the fact of living now rather than being in the world's work forty years ago.

From 1860 to 1872 the current of literature flowed in a steady stream, and as the operation had by this time taken its rank, important as this literature was, it was simply accumulating experience, which had its natural outcome in the rapidity with which complete and masterly treatises were given to the public. Atlee, in 1872, Wells and Peasley, in 1873, Olshausen, in 1876, gave, in this period of four years, a brilliancy to this operation equalled by no other in surgery. As an embodiment of a vast personal experience, and for an honest and careful analysis and grouping of the accumulated facts, Wells, in his edition of 1873, must be given the first rank.

The few modest words in which Mr. Wells makes any personal allusion to himself in the edition of 1873 are expanded in the present book into a page or two of intense interest. Beyond the ovariotomist we see the man with the strong personality that has contributed so largely to his success as a surgeon. Like all great surgeons, so little is known of them personally, beyond their immediate circle of friends and patrons, that it will well repay quotation.

"I began work in London," he says, "in 1853, and in the following year joined what is now called the Samaritan Hospital. Dr. Savage, who is at present senior consulting physician, is the only one of the acting staff who was then connected with it. We had at the beginning only a small house in Orchard Street, which was pulled down several years ago. On the ground floor were an office and a waiting-room, and a dispensary downstairs; on the first floor the patients mustered in the front room, and were attended to in the back. On the second floor there was a room for the matron, and another for a resident house-surgeon, whose chief occupation was in bandaging the ulcerated legs of a crowd of out-patients. On the third floor there were attics, one of which was occasionally made use of for an in-patient. At this time I did nothing but out-patient work, and in January, 1855, went off to the Crimea. But in the April before I had made my first acquaintance with ovariotomy. Baker Brown invited me to see him operate, and I went with Mr. Nunn and assisted him. It was his ninth case, a dermoid cyst with adhesions, which made the proceeding long and troublesome. Nine days after the patient died of what we can now recognize as septicæmia. This so influenced Brown that he only did one more case, and that unsuccessfully, during the next four years and a half, saying that 'it was of no use, peritonitis would always beat one.' I was not favourably impressed, but had learnt how some of the great difficulties might be overcome so far as the operation itself was concerned. Away from England, in all the excitement of war-surgery, of course the subject was at rest. But after my return, in 1856, I resumed out-patient work in Orchard Street. Snow Beck, Graily Hewitt, and Priestley had joined the staff, so had Routh and Wright, and we began to hope for something more than dispensary practice. By arrangement with the matron a bed could every now and then be obtained in an attic. Snow Beck set the example, and operated on a case of vesico-vaginal fistula with the canterbury, and

<sup>1</sup> Jour. des Conn. Med.-Chirurg., 1844 (Clay).



cured it. We did not often see cases of ovarian disease at that time, but they did appear occasionally. In one case I had proposed to attempt ovariectomy, but it was decided that a trial should be given to the treatment by injection of iodine. As I have said, Brown had given up the operation; very few others were attempting it, and most men were lapsing into the old state of indifference, if they were not loudly protesting against it. During the autumn of 1857 a young woman was under treatment for what appeared to be an ovarian tumour on the left side. Various opinions were confidently expressed that this could not be an ovarian tumour, because intestines could be felt to be in front of it. But I determined to see what it was, and in December, 1857, twenty-four years ago, I prepared for my first ovariectomy. Reflecting upon all the ways and forms of using the ligature, I had resolved to use the *écraseur* for the division of the pedicle, as was done some months after the publication of my suggestion by Dr. John L. Atlee, of Lancaster, Pa. We cleared out the waiting-room, got a bed there, and secured a nurse. Quite a crowd of visitors came. As soon as I opened the peritoneum, and it was proved beyond all doubt that the tumour was behind the intestines, I was induced very unwillingly to close the wound, and do nothing more. The patient recovered without any bad symptom, but died four months afterwards in St. Bartholomew's Hospital, when it was found that it was a tumour of the left ovary, which might have been removed quite easily. This was not encouraging for a beginner, but it attracted the notice of Mr. Bullen, of the Lambeth Workhouse, and he offered me a patient then in his infirmary, who had been tapped three times in Guy's Hospital, and four times in the Lambeth Workhouse, and had iodine injected. As she was willing to face any risk, I did ovariectomy for her in February, 1858. The pedicle was treated by whipcord ligature, after the fashion of Clay, Bird, Brown, and the earlier ovariectomists. At that time we had a house-surgeon, Mr. Cooke, afterwards of Clovelly, and greatly owing to his constant care the poor girl recovered. She became a nurse in the hospital, went into service, then emigrated, and I heard from her several years afterwards, in 1868, married to the German overlooker of a large estate in Queensland, whose salary was £240 a year. Had ovariectomy not been performed she must have died, in 1858, a pauper in a workhouse. Between this first case, in February, 1858, and the second, in August of the same year, we had left the old house and removed to that in Seymour Street, where the hospital now is, and the second operation was done in one of the rooms in which I have since completed my long series of 408 hospital cases."

After this follows forty pages, or more, of terse, graphic writing, to which the individual factor which has made Mr. Wells the famous surgeon that he is, lends a peculiar charm. Indeed, the entire fifth chapter, on "The Rise and Progress of Ovariectomy," is one of the most interesting surgical histories that we have ever read, and will take its deserved place among the classic literature of our profession.

The book opens from a purely pathological standpoint, without any of the preliminary normal anatomy and function that introduces his volume of 1873. He preserves the classification of that edition, with the exception of adenoid tumours, to which he adds one group—hypertrophy of part or whole of the ovary—and to the extra-ovarian tumours he adds cysts developed in the subperitoneal tissues of the pelvis or abdomen. With some few exceptions both cuts and text are alike in the two books.

It will give the reader a fair idea of the volume to omit all pathological portions, which are well up to the present state of science in this department, and confine our attention to that which makes the book memorable—ovariectomy, and the rich and ripened experience of Mr. Wells upon it.

Mr. Wells makes the claim, rather indirectly, that he was among the first to recognize the origin of septicæmia in germ infection. As early as his fourth case, in 1859, he became aware of a cause of death after ovariectomy, which was not explainable upon any existing theory of causation.

At his seventy-fourth case, in 1866, he adopted precautions to exclude germs. In 1864, at the Cambridge meeting of the British Association, he treated of hospital atmosphere, organic germs, and had begun to use carbolic acid and the hyposulphites about his ovariectomy cases. "Here then," he says, "was theory and practice brought into accord; and my quarantine, drainage, vaginalappings, and chemical remedies may justly be scheduled as the concrete form of antiseptis, which has since become volatilized into the germicidal spray of Lister."

About here Mr. Wells drew the line at which he halted for years. In the present volume he says that, "I feel still doubtful about the spray;" yet his testimony is all in favour of it. The doubt arises from his innate conservatism, and the habit of carefully feeling his way by experimentation. "I have had reason to fear that its chilling effects upon the patient were injurious. But I have never once seen any other ill effect which I could attribute to it, nor anything like carbolic poisoning." This and what follows ought to convince him, but he continues, that he has for more than—

"a year past used a spray of absolute phenol of a strength of one to forty. And this I continue to use, believing it to be safer than the irrigation, or sponging proposed as a substitute, although I fully admit that we require a far greater number of trustworthy experiments, or of comparative observations made under similar conditions with and without spray than have yet been made known, before we can receive any satisfactory answer to the questions whether carbolized vapour or air can destroy or render innocuous, infective, or putrefactive substances or germs floating in the air; or what is the share which the spray, among other additional antiseptic precautions, has had in obtaining the better results which have undoubtedly accompanied their combined employment."

One might devote pages to personal description and to analysis of mental characteristics, and not obtain the clear idea of the quantity and manner of the man, as Carlyle has it, that the few last paragraphs give.

One result of antiseptic precautions in ovariectomy has been in changing the method of treating the pedicle. In the whole range of surgery there is not a more interesting subject than the various methods resorted to in dealing with the vexed problem of the pedicle. It seemed at last settled. Under the influence of Wells and Atlee a surgeon might almost be accused of stubborn self-will and neglect who failed to use the clamp. Measured by statistics—and by that measure always has both ovariectomy and ovariectomists been judged—experience seemed to settle the problem that way. And surely, painstaking experimenter as Mr. Wells is, he must fairly admit that experiment could go no further than it has in the various methods devised and tried at this stage of the operation. Nearly all English ovariectomists claim that the experience of Keith ought to be excluded upon this question. We have in the case of this operator such a powerful personal factor, plus his method of dealing with the pedicle, that we cannot compare his figures with those of other operators. Such, at least, is the opinion of Mr. Thornton. Syme, many years ago, predicted a great future for Keith. "His hand," said Syme, "is one very rarely seen." Leaving out the great Edinburgh ovariectomist, the claim of the clamp as the correct method of dealing with the pedicle was established. Probably no one was more surprised than Mr. Wells to find that the clamp was losing ground, and the advance consisted in resorting to what at one time it was safe to regard as an abandoned method.

With the fairness that belongs to his type of mind, he states the conditions very fairly. He says:—

"On carefully going over all the notes to find if the smaller mortality in those treated antiseptically could be due to any other causes, the only modification in the mode of operating, which calls for further remark, is the very much more frequent, almost constant, employment of the *intra*-peritoneal treatment of the pedicle since the trial of the antiseptic system was begun. Before that time the extra-peritoneal treatment had been by far the more successful in any practice. To my mind, one great merit of the antiseptic system is that it has made the *intra*-peritoneal method, which was formerly the less, now the more successful method of dealing with the pedicle. Formerly, septic changes, which are now scarcely ever observed, frequently took place in or about the tied pedicle, and the many disadvantages of the *extra*-peritoneal method, which were only counter-balanced by its greater success, have no longer to be endured."

He could scarcely make his evidence stronger; and yet we suppose, for the reason that the habit of years dies hard, we find him speaking of the clamp after the following manner, in that portion of the book devoted to the technique of the operation:—

"Although the clamp is now almost disused, it is so simple, safe, and rapid a mode of dealing with the pedicle for an inexperienced operator, that it is almost necessary to repeat the directions for its use, given, as follows, in my edition of 1872."

It is stating it mildly to say that the clamp is obsolete when it is only "almost necessary" to give directions for the use of the clamp in such a treatise as we are reviewing.

The following figures, while showing the consistency of the author, show also the gradual change that has taken place in his method. In his first series of 500 cases we find the clamp used 349 times, and the intra-peritoneal method, or the ligature, returned only 57 times; in the first instance with a mortality of 19.77; and in the latter, of 49.12. Going on to his second series of 500 cases, we find the clamp used 274 times, with a mortality of 20.8; and the ligature returned 203, with a mortality of 20.19. His second series of 500 ovariectomies began in June, 1872, and at which date we may fix the beginning of his gradual conversion from the clamp to the ligature.

Before reverting to another phase of the antiseptic method at the hands of our author, antisepsis has led to another important change. We quote—

"Another great gain from the antiseptic system is, that drainage of the peritoneal cavity is now scarcely ever necessary. In the paper which I brought before the Medical and Chirurgical Society on completing 800 cases, I contended that drainage should only be an exceptional practice. But I did not then imagine that it could be almost entirely discarded. I can now say that I have not drained one case in which antiseptic precautions have been taken; and on looking back, I cannot believe that there are more than two in which, if a drainage-tube had been used, it could have been useful. The simple explanation is, that the mixture of blood, other fluids, and air left in the peritoneal cavity, or oozing into it after operation, formerly went through putrefactive changes, and if not drained off produced septicæmia, whereas now no putrefaction takes place, and absorption is quite harmless."

In order that we may continue to give an insight to the inner man—his mental portrait as it were—it will be interesting to continue our quotations one step further. Commonly speaking, the average man would have stopped at the last word of the above quotations; but his last words are rather on the other side. And this is the result, we believe, of his habit of statistics; and it is a habit that will grow upon a man, and dominate him like strong drink or opium. If this were all, it would be little harm

to science, but, unfortunately, it leads to the habit of looking at statistics from the standpoint of the concrete. It is the solid mass that is regarded, and not its essence, or its abstract factors. Its first form is the statistics that proves anything, and in its latter it proves nothing; it simply points with spiritual fingers, as it were, that certain things have sufficient likeness to be grouped together, and in this grouping lies the possibility of coincident causes; and not that this group is, in its several members, the co-result of a common cause. This, it strikes us, is the significance of medical statistics; and in the divergent conditions, that prove the rule in ovariectomy, it ought to be the significance given to a mass of figures with reference to this operation. We doubt if Mr. Wells's changes of method were the result of repeated, deliberate, and critical examination of his numerous figures. Confidence gave place to uncertainty, uncertainty grew into a state of mental negation, with an inversion of the process mentally, until confidence was restored with a new foothold. He lived in the atmosphere of his facts, and he, himself, was a factor of which no possible grouping, or tabulation, could give even a suspicion. But let us turn to our quotation. Alluding to a brief tabulation of his cases from 1876 to 1881 inclusive, he says:—

“The first and last entries would almost settle the whole matter negatively if they stood alone. The series of 165 cases done antiseptically cannot be said to be better than the 71 hospital cases done according to my former custom. Taken together they only make it evident that, under given conditions, ovariectomy can be practised as successfully one way as another. But if I compare the private cases, which I did during the two last years of my hospital work, with the cases which came after them, the contrast is very striking. I had 81 cases with 22 deaths, a mortality of 27.1 per cent., and this would make the benefit of antiseptics seem to be as much as 17 per cent. Putting, however, the whole practice of those two years together, hospital as well as private cases, the advantage becomes a trifle less than 9 per cent. Still, as all the circumstances of the two series were so different, they afford no real ground for forming a judgment. But, in the first place, the patients have had all the advantages belonging to a position in life above that of hospital cases. Then the abandonment of the clamp and the use of the ligature with the intra-peritoneal treatment of the pedicle took place at the time of the other change of dressing and the use of the spray, and I have never put a drainage-tube into any one of the wounds. It must be remembered, too, that I have been free from all but the most casual contact with hospital influences, have never attended a post-mortem, never carried about with me the infections picked up in general practice, and having had fewer persons present at my operations have eliminated a great part of an incalculable source of danger. Again, it appears by my reports that four of my last sixteen deaths were caused by septicæmia, so that antisepticism has not abolished this plague of abdominal surgery.”

Mr. Lawson Tait, in a recent article, comments as follows on the results of Mr. Wells's practice.<sup>1</sup>

“After Mr. Spencer Wells had gone on for twenty years operating on hundreds of cases with a mortality of twenty-five per cent., Dr. Keith persuaded us that ovariectomy could be done with less than six per cent. of deaths. The mortality of Dr. Keith's practice and my own is now as low as three per cent., and this after we have both tried the so-called antiseptic system of Lister, and have given it up as more dangerous than useful.”

Mr. Wells and Mr. Tait stand at opposite poles of character. The first one is cautious, making a step in advance and then turning to look about on every side; the mind of a master workman who applies his rule and

<sup>1</sup> Am. Jour. Obstet., vol. xv, p. 547.

level to every inch of work, more practical than theoretical, more courageous than self-confident, his practice was always in advance of his theory; the other bounds to his conclusions masterful and self-confident of himself, —it is Tait and not antiseptics that reduce to three per cent. the mortality of ovariotomy. Mr. Tait has no right to claim Dr. Keith's results as telling against antiseptics. Dr. Keith has reached the very acme of antisepticism; but with Mr. Tait a spade is a spade, it represents a thing, not an idea, and thus while Dr. Keith has idealized antiseptics, Mr. Tait reaches the same results and gives it another name. Antiseptics has passed beyond Listerism, it has become a surgical creed, a great underlying principle that divides the surgery of to-day from that of the past. It is no longer a formula, a doing of certain things in a certain way, but it is doing many things in a variety of ways and under a governing principle, and not according to rule. But to-day this is hardly recognized in a popular sense, and it is because the principle is lost sight of in the formula. The elaborate ritualism, as it may be called, of antiseptics as taught by its apostle Lister and his disciples has stood in the way of the popular advance of antiseptic surgery.

We may dismiss this subject with one more quotation from our author:—

“It will be gathered from these remarks,” he says, “that the chief modifications in my practice have been the use of carbolic spray during the operation, the soaking of the sponges, silk, and instruments in a solution of the acid, tying the pedicle, and leaving it in the cavity, and the disuse of drainage-tubes even in unpromising cases.”

Mr. Tait, in the article referred to, says in his positive way, “Now, however, when the removal of an ovarian tumour is fatal only when the patient has been tapped, or the operation injudiciously delayed, we are justified in performing abdominal section not merely for the saving of life, but for the relief of suffering.” As such an opinion prevails extensively, going even so far as to condemn the use of the aspirator, it is important to bring to bear upon this question the testimony of Mr. Wells. He tabulates 500 cases with reference to this point, and says:—

“It may be seen that the general mortality of the 500 cases is 25.4 per cent., and that 235 patients, or nearly one-half had never been tapped. In them the mortality is 23.4 per cent., just 2 per cent. less than the general mortality. In other words, the mere fact that a patient has, or has not, been tapped (so far as can be judged from 500 cases in the hands of the same operator) does not affect the result of the operation by more than 2 per cent. Indeed the mortality of the patients not tapped, though less by about 10 per cent. than that of the patients who had been tapped twice, is greater than that of the patients who had been tapped once and three times. Thus 140, or rather more than one-fourth, had been tapped once, and the mortality was 23.57 per cent. Of 32 who were tapped three times, the mortality was 21.87 per cent. Of the 49 who were tapped twice the mortality was nearly the same as that of the group of cases tapped from four to eighteen times. It may be taken as almost certain that the mortality of ovariotomy is but little affected by tapping, that the fact of a patient not having been tapped, or having been tapped very often, is by itself of little or no value in prognosis. I still adhere to the following propositions:—

“1. That in cases of simple ovarian or extra-ovarian cyst it is right to try the effect of one tapping before advising a patient to undergo a more serious risk.

“2. That one or more tappings do not increase considerably the mortality of ovariotomy.

“3. That tapping may sometimes be a useful prelude to ovariotomy, either as a means of gaining time for a patient's general health to recover . . . or of lessening shock, by relieving her of the fluid a few hours or days before removing the solid portion of an ovarian cyst.”

Certainly with this experience of Mr. Wells before us we cannot fall back on tapping as one of the causes of our failures in ovariectomy; even if Mr. Tait will admit that lateral adhesions do not in any material way interfere with the safe performance of the operation, and it is rare indeed to find any other trace than this of the operation of tapping. In fact this simple operation will always have to bear the curse of many unsuccessful ovariectomies. We remember to have seen one gentleman operate unsuccessfully who had to contend with no adhesions except a few slight pelvic ones, which he claimed were the result of three previous tapings.

Although Mr. Wells touches upon the subject of adhesions as a complication of ovariectomy in his volume of 1872, still, as he speaks in the present book from the standpoint of a larger experience, it will help clear up the doubts of young operators. In 500 cases of ovariectomy the mortality was 13.67 per cent. in cases free from adhesions; 18 per cent. with parietal adhesions; 19 per cent. with parietal and omental adhesions; 24.19 per cent. in omental, and 37.25 per cent. in intestinal, pelvic, and others. Why there should be a difference of 5 per cent. in favour of cases with parietal and omental adhesions, as compared with those simply of the omentum, and with a basis of 63 and 62 cases respectively, figures do not explain. One remark of the author is worth attention. He says that the "general mortality has diminished, and that of the cases without adhesions." It strikes us that these stand in relation of cause and effect as regards the operation, and points also to the gradually altered relation which ovariectomy holds, both in its professional and popular aspects. Fewer adhesions are now found simply for the reason that ovariectomy is done very much earlier now than formerly, and before adhesions occur. Patients have more confidence in it as a method of cure, and surgeons are more free to advise a resort to it. To this reason—that is, operation before the tumour has made serious inroads upon the vitality and nutrition of the patient—may we assign that fact, that in 28 cases of ovariectomy up to twenty years of age there was a mortality of but four cases. From the same tables we observe that after the fiftieth year the mortality has reached its maximum. A tabulation of the 1000 cases, upon which the present volume is based, with reference to the duration of the disease previous to operation, would be of great scientific as well as practical value, but Mr. Wells has overlooked it.

Reference has already been made to the method of dealing with the pedicle, but the matter is so important, and is now in a sort of transition period that the subject is worth further attention.

Notwithstanding the fact that the ligature has superseded the extra-peritoneal method of treating the pedicle, and is by far more generally applicable than the intra-peritoneal treatment by the canter, yet those who advocate the use of the ligature are not in agreement as to the minor details. Mr. Wells transfixes the pedicle, and according to its size ties in two or more portions before the cyst is cut away. Cases are on record where the ligature simply encircled the stump; it has slipped off, and fatal hemorrhage resulted. Mr. Bryant and some other operators, who employ the ligature, think that it is important that one loop should be laced within the other, but Mr. Wells avoids this, as in tying one-half of the ligature the part already tied may be loosened. In case a pressure-forceps has been applied before the ligatures are passed, the pressure of the forceps must be relaxed before the ligatures are tied, otherwise it will be found that they have not been tied firmly enough, and the tissues released from

the forceps may slip under the ligatures. The tightening of the ligature should be done simultaneously with loosening the clamp or forceps. Mr. Doran concludes that it is much more dangerous to draw the ligatures too firmly than to leave "them somewhat looser than is strictly advisable." Mr. Wells dissents from this, and teaches that a ligature should sink deeply into the tissues of the stump. He always applies the ligatures as tightly as possible. Mr. Thornton believes that the presence of a blood-clot on the cut surface of the stump "as the perfect condition to aim at in the treatment of the ovarian pedicle by ligature. This cap of blood-clot shows that the ligatures, while tight enough to prevent serious hemorrhage, were not so tight as to cut off all supply from the distal portion of the stump." Mr. Thornton's expression, "serious hemorrhage," is not a well chosen one, since any hemorrhage is serious; and Mr. Wells expresses his objections to it in a most positive manner. Under all circumstances the ligature should be cut off, and the abdominal wound closed, and not, as is the practice of some, to be left hanging out through the wound.

"Having tried both methods," says the author, "the results would lead me to cut off the ends. . . . If low, diffuse peritonitis and effusion of serum may be feared, then it would be better to secure a drain through the wound by a glass drainage-tube than by the ends of a ligature. The cicatrix remains weak at the spot where the tube or ligatures passes out, and it yields before the outward pressure of the viscera. I have seen this in nearly every case where I adopted this plan." Mr. Wells makes scant reference to drainage, and when alluded to it was evidently a reluctant recourse.

Mr. Wells makes the claim of being the first to direct attention to the exquisitely clean toilet of the peritoneum, and we think the claim is a just one. Others have followed after him, and made this a special point, like Dr. Keith and Mr. Tait; and to this, probably more than any other feature of their method, is owing their reduced mortality. Undoubtedly the charge made against Mr. Wells by Mr. Tait of a high range of mortality in his ovariectomies is a true one; but there are several reasons to account for it. No man living, who has filled the peculiar position of Mr. Wells, has laboured more earnestly for success—an ideal success—which he had, at a very early period of his career as an ovariectomist, placed at a high standard. For all the brilliant results that have since been reached by others, Mr. Wells had prepared the ground. He had seen with a sort of prophetic vision what was possible in abdominal surgery. His own practice fell short of this ideal; and we think there were reasons in the man's peculiar position to account for it. In the first place, he clung to his clamp when he ought to have given it up. Others were working more successfully without it than he was with it; and it was only from the actual pressure of events that he gave it up. But at the time the intra-peritoneal proved the better method, with the advent of antisepticism, Mr. Wells was the power, in all matters ovarian, upon the throne. Dethronement came, however, and in the one test of an ovariectomist—the number saved, not the number operated upon—he found that the honours belonged to others. He followed the tide, and since that date he has continually lowered his rate of mortality. Another cause existed in his peculiar position before the profession. From all England and the continent came women who regarded Mr. Wells as their last hope; if he could give them no hope then, indeed, were they doomed. It is impossible for us to say how many, but the cases were very numerous in which he operated against his better

judgment, when if he had simply consulted the value of his percentage of recoveries, he would have refused. But if there is a marked feature of his book which distinguishes it from other works of ovariologists, it is the spirit of humanitarianism that runs through it. Not that others want it, but it is individualized in his book, just as it appears in him as a trait of character.

Another cause which has worked against him has been the atmosphere of London. No amount of antisepticism can make London fogs and air favourable in either its moral or material relation to ovariology. London has outgrown its atmosphere. There is not enough air above it to carry off the smoke of its innumerable fires, with only a contingent remainder for respiration. We doubt if ovariology can ever be made as successful in the Samaritan Hospital as it is made in similar institutions in what are called the provinces, although Mr. Thornton is doing splendid work.

At the conclusion of ovariology proper, Mr. Wells turns his attention to what we know in this country by a strange contradiction in terms as normal ovariology, but what Mr. Wells terms more consistently, the "modern extensions of ovariology." Upon this subject Wells says:—

"Though I accept the principle, I see that the operation has a very limited application, and is so open to abuse that its introduction in mental and neurotic cases is only to be thought of after long trials of other tentative measures and the deliberate sanction of experienced practitioners. Mortal diseases admit of mutilating and desperate remedies. But mutilation for the sake of terminable maladies, which are the fruits of a vicious civilization or a reckless procreation, is rather a question for the moralist than the surgeon. In the case of fibroid growths with much bleeding the position is not the same. There life is threatened, the danger constantly increasing, and the last resource, the very serious operation of amputation of the tumour or of the uterus. If it can be proved that the annulment of ovarian function, even at the cost of the organs, arrests the development of uterine growths, or holds in check its bleeding propensities, then the surgeon might rightfully remove the ovaries. But that the conditions justifying such an operation are exceedingly rare is evident." . . .

After giving the history of a couple of cases (his experience only including four cases up to the date of publication) he continues:—

"If I meet with what I believe to be a suitable case, and a willing patient, I shall certainly do this operation again; removing both ovaries and being especially careful that every fragment of both ovaries is removed. I should operate rather through the abdominal wall than by the vagina; and be prepared for the probability of intestines being wounded when dividing the peritoneum. In uniting the edges of the wound I should place the sutures nearer to each other than is usual in ordinary ovariology in order to guard against the occurrence of a ventral hernia. I think it would be only an exceptional case, where an ovary could be felt low down between the vagina and rectum, that a surgeon would now do oöphorectomy through the vagina. In almost all cases the abdominal operation would be preferred, and a word of caution is necessary to any one about to perform it; for it is more difficult than ordinary ovariology. It is not easy to divide the peritoneum without injury to the intestines. They have a great tendency to protrusion and cannot be replaced readily after they have protruded. The opening into the abdomen should be made large enough to admit two fingers. With these the uterus is to be felt, one finger being in front of the fundus and one behind it. Then, by carrying them outwards, first on one side and then on the other, an ovary is felt and may be brought up outside the abdominal wall. Its connections with the uterus are transixed and tied in two parts with a silk ligature; a third ligature being placed behind the other two. The ends of all must be snipped off close to the knots and the ovary cut away not too near the ligatures, which are then allowed to slip down into the pelvis. It is not yet decided if the fimbrial and



part of the Fallopian tube had better be removed with the ovary. If not quite healthy, they should certainly be removed. After the second ovary has been removed, the wound must be closed as usual after ovariectomy, but with the sutures nearer to each other, to obviate the greater tendency of omentum, or intestines to separate the lips of the incision. The tension is always greater in these cases than after removing large ovarian tumours, when the integuments have been a long time on the stretch. . . . But I cannot conclude this chapter without a word of caution against the extreme frequency with which the operation has been resorted to in this country, and at which Dr. Battey publicly expressed his astonishment at the meeting of the Medical Congress in August last. Many cases where the symptoms have been described as sleeplessness, hysteria, nerve prostration, dysmenorrhœa, or neurasthenic disorder, have led to Battey's operation, and in the majority of such cases healthy ovaries have been removed. These are just the cases in which Dr. Weir Mitchell's systematic treatment, so successfully followed in this country by Dr. Playfair, should surely have been tried. Except in cases when bleeding fibroids may call for the removal of healthy ovaries, we might at least require some evidence of the ovaries being diseased before consenting to their extirpation in the hope of curing any of those vague nervous disorders to which women are so subject, which are often dispelled by moral treatment or social changes, often benefited by measures which can have but little effect except on the imagination, often return after apparent cure in any way, and leave the hapless beings the prey of unscrupulous or illogically enthusiastic experimenters."

We have quoted enough to show the very decided position that Mr. Wells takes on the "modern extensions of ovariectomy." Any opinion so freely given by a man of Mr. Wells's experience in abdominal surgery must have its weight upon any closely related subject. One thing about it is of a sort of historical interest. Some of the arguments used by Mr. Wells against Battey's operation in "neurasthenic disorders," or in plainer words hysteria, had been used against himself in the early history of ovariectomy. Argument like history repeats itself. His argument is, however, one of good common sense, which cannot be said of them as applied against laparotomy for ovarian cysts. In the vast range of woman's nervous disorders no treatment is so open to abuse at the hands of hundreds of so-called specialists as oöphorectomy. Mr. Wells has not raised his voice any too strongly, or too loud against the peculiar surgery of the Birmingham school.

We take our leave here of that part of the volume devoted to ovarian tumours and their treatment, and turn to the too brief conclusion of the book assigned to uterine tumours. It is to be regretted that Mr. Wells touched upon the subject at all in the present volume. Ovariectomy is large enough and important enough to be treated by itself, and uterine tumours in their surgical relations, following in the path made clear by the new departure in ovariectomy, furnish such a wide field for surgical exploit and research, upon which so much interest is being concentrated that they deserve more careful study than can be given them at the conclusion of such a volume as the present. Mr. Wells's opportunities for becoming familiar with uterine fibroids must have been extensive. He was intimately acquainted with the difficulties of the diagnosis between them and ovarian outgrowths, and this surface acquaintance must have centered his attention upon them. The first chapter upon this subject is devoted to diagnosis illustrated by such cases as have occurred in his own practice very graphically related.

The chapter is concluded by a table of 31 cases of exploratory incision and partial removal of fibro-cystic tumours of the uterus. This chapter, we venture to suggest, would have had a more telling effect upon the reader

if it had been related in connection with differential diagnosis in the body of the work. As it is, many of the well-told points of difference in the characters of pelvic tumours are very liable to be overlooked in case the book is taken up for hasty reference. The surgical lesson conveyed by this chapter does not relate so much to the proper method of treatment by abdominal section of fibroid and fibro-cystic uterine outgrowths, as it does to the method of procedure when one has made his first incision and found a mistaken diagnosis on hand. To the ovariologist the chapter is a highly useful one, but if one places any confidence in the title of the book and is thus tempted to turn to this chapter for information upon the various methods that modern gynecology permits in the surgical treatment of uterine new growths, he will be disappointed.

The next and concluding chapter of the book is "On partial amputation and on complete excision of the uterus." The most of the chapter is given up to his report of the excision of a gravid uterus rendered necessary by epithelioma of the cervix (Freund's operation). It is unnecessary to refer further to the very interesting case, but Mr. Wells's remarks upon Freund's and Porro's operations will be read with interest. Commenting on his own case, he says:—

"If I am to repeat the operation I should modify its successive steps according to the gravid or non-gravid state of the cancerous uterus. When non-gravid, recent experience seems to prove that extirpation by the vagina is the safer method, when gravid it is possible that dilatation of the cervix and emptying the uterine cavity as a preliminary measure might still enable the operator to act through the vagina. No case so treated, as far as my knowledge goes, has been recorded, and it is not easy to estimate the amount of risk to be encountered. It seems probable that in nearly all cases of gravid cancerous uterus, either the abdominal or a combined vaginal and abdominal operation would afford the greatest chances of success. In either case a large elastic catheter or a canula, through the end of which diverging wires expand, like but shorter than those figured on page 169, would serve as a guide and safeguard in separating the uterus from the bladder, and if the abdominal operation should be selected, a large ring pessary, or a modified Zuanki's pessary, in the vagina, would afford better help in making the section of the vaginal wall round the neck of the uterus than the cotton plugs which I used. After withdrawing the uterus from the abdominal cavity a few sutures should be inserted so as to bring together the edges of the upper part of the opening in the abdominal walls and close it over a large flat sponge. This prevents the intestines from escaping and protects them from the cooling of the spray when it is used. By careful dissection, and the guide of a catheter, the uterus may be separated from the bladder without much danger, but I do not yet see any mode of certainly providing against the mischance of tying or dividing one or both ureters. I fear that with all possible care it is an accident which may occasionally prove unavoidable. Mr. Nunn suggested to me last year that removal of the uterus would be more easy if the organ were first divided into two parts by cutting it through in the median line and removing first one side and then the other. Professor Müller, of Berne, has more recently made a similar recommendation, as a modification of total extirpation of the uterus by the vagina. He has not carried his proposal into practice, but he thinks that the necessary ligatures would be more easily applied and be much less likely to slip, if after drawing down the uterus, it can be split into two symmetrical halves in a vertical direction. Then each half of the uterus with its ligament could be drawn backwards, the ligatures applied, and the uterus cut away."<sup>1</sup>

Upon the subject of extirpation of the cancerous uterus the author's comments are favourable, and conclude the chapter and volume as fol-

<sup>1</sup> Prof. Simpson, of Edinburgh, has operated in this manner; the result was unfavourable. *Am. Journ. of Obstet., Monthly part, Nov. 1882, v.*

lows: "We need not despair of establishing for excision of the cancerous uterus a higher scale of success, with fewer failures and more recoveries, and of being able to rescue from their misery as large a proportion of our patients as any surgeons can claim to do when they exercise their art for the removal of cancer from other parts of the body."

We wish, for the sake of a man who has left a great name after him, and was, on the testimony of those who knew him, a handsome man, that the frightful wood-cut of McDowell, which adorns both editions, had been omitted.

The book sadly needs an index; owing to this the value of the work for ready reference is nearly useless. Proper names are here and there misspelled. We notice one mistake of this kind, if mistake it is, that gives us great pleasure: our friend Dr. Paul F. Mundé is written Paul St. Mundé. Dr. Mundé richly deserves the honour, and, as we hinted, it may not be a mistake.

Omitting the pathological part of the work as more than equalled by other writers upon ovarian disease, the subject of ovariectomy has never before received such an exposition, and we do not think it is going beyond proper limits to say that no other man could have produced it. We believe that the days of the ovariectomist as a specialist are numbered. Methods have become simplified, errors corrected, until one man, all things considered, will operate as successfully as another. Hundreds will be doing ovariectomy in the future when one has done it in the past, and the experience that approaches close upon the thousands of completed ovariectomies will no longer be possible, in one man's life, after the present generation of operators has passed away.

As an embodiment of experience, rich and practical beyond precedent, it is equalled by but one volume in gynecological literature, the great work of Emmet. It is the record of a life work that will brighten as years go by, and keep the memory of Spencer Wells always fresh.

E. V. DE W.

ART. XVI.—*Microscopical Morphology of the Animal Body in Health and Disease.* By C. HEITZMANN, M.D., Late Lecturer on Morbid Anatomy at the University in Vienna, Austria. With 380 original engravings. 8vo. pp. xix., 849. New York: J. H. Vail & Co., 1883.

ATTENTIVE readers of the medical periodicals of the last few years will recognize, in many pages of the volume before us, the reappearance of a number of papers and abstracts of addresses, which, perhaps, having proved rather indigestible mental pabulum, are again set before the reader for his renewed attempt at assimilation. These contributions, whether bearing their true import, or whether masked under the title of histological research, had principally and chiefly for their aim the support and promulgation of the so-called "Bioplaxion Doctrine"; the same may be said of many of the eight hundred and fifty pages forming the book under consideration, and had the words "from the stand-point of the Bioplaxion Theory" been added to its title, a more correct idea of its aims and scope would have been indicated.

While Dr. Heitzmann contributes the majority of the pages, by trans-

lations and reprints of former papers, as well as by the addition of much especially written, he has availed himself of the corroborative evidence and support to his views derived from a number of papers reprinted from various sources, having as their apparent themes the normal or pathological histology of various tissues, but frequently really being chiefly in the interest of the "Bioplaxson" theory, being, we take it, contributed mostly by gentlemen in more or less intimate relation to the laboratory of Dr. H.

He who undertakes, at the present day, to conscientiously discuss, with any degree of completeness, but the normal histology of the body, undertakes a very respectable task, to which the limits of an ordinary sized volume may well be devoted; but when an author assigns to himself the twofold task of considering tissues both "in health and disease," in addition to which is coupled the burden of establishing a new biological doctrine, he certainly has allotted to himself a colossal undertaking, in the attempted completion of which some part is almost sure to suffer. In the instance before us, both the description of the normal and of the pathological histology of the tissues lack in fulness and completeness, being a mosaic of interpolated papers and text. The part most complete seems to be the considerations regarding the Bioplaxson theory: indeed, one cannot avoid feeling that he is reading the descriptions of tissues not as they are, but as they *should be*—to support certain hypotheses.

In a work of such size, where almost every page bristles with novelties in assertion and in interpretation and explanation of well-known microscopical appearances, it is, obviously, far beyond the limited space of a review to discuss with any degree of completeness the many points in which our author differs from the usually accepted views; we shall, therefore, endeavour to present but the principal features of the biological doctrine of which Dr. Heitzmann is founder, and his book the systematic exposition.

The Bioplaxson doctrine may be said to have originated with the presentation of the researches of Dr. Heitzmann some nine years since, when he communicated to the Academy of Sciences, of Vienna, the results of his observations upon the structure of protoplasm, although the name "Bioplaxson" was suggested later by Dr. Elsberg.

From the study of the protoplasm of the active amœba is the following:—

"In the body of the amœba is imbedded a globular, homogeneous, pale gray nucleus. This is surrounded by a narrow light rim, which is traversed by delicate grayish threads. Many of these threads, often visible only temporarily, are conical; all of them emanate at their base from the nucleus, and have their point directed toward the periphery of the amœba. Each point blends with one of the gray granules by means of filaments, so as to convey the impression that the amœba is traversed by an extremely delicate net-work, whose points of intersection are the granules. The outer contour of the amœba consists of a continuous thin layer of a slightly shining substance, into which penetrate filaments of the most peripheral granules." (p. 21.)

In other words, that protoplasm usually described as granular is, in fact, permeated with a net-work of delicate fibres, the intersections and optical sections of which cause the appearance commonly interpreted as granular. What is stated of the amœba, is further described of the white blood-cell, and later of other cells, as of bone and cartilage.

Accepting the existence of this arrangement in the living tissue as demonstrated beyond question, the appearances are interpreted as of far reaching import, and thereon is built a new structure of speculative biology. According to these views:—

"The protoplasm, therefore, is not structureless but has a reticular structure, and the granules are not foreign, but belong to the living protoplasm, being the points of intersection of the reticulum. *The nucleolus, the nucleus, and the granules with their connecting filaments, are the living, or contractile matter proper.* This solid matter is suspended in a non-living, non-contractile liquid. In other words, *the contractile matter in mesh-spaces contains and, as a shell, incloses a non-contractile fluid matter, which latter cannot be simply water, as the phenomena of diffusion prove.*" (p. 28.) Further: "there is no such thing as an isolated, individual cell in the tissues, as all cells prove to be joined throughout the organism, thus rendering the body *in toto* an individual. What was formerly thought to be a cell is, in the present view, a node of a reticulum traversing the tissue. (p. 56.) . . . The bioplasson [living-matter] is one uninterrupted mass throughout the body, and is connected from the top of the head to the heels in what we call tissues." (p. 61.)

In short, that through all cells there is a *continuous* net-work of the true living, contractile matter, including nucleus and nucleolus, which net-work alone represents the really living matter, and that in this alone originate the phenomena of life; that in the meshes of this net-work there is suspended a non-living, non-contractile substance, fluid in the case of contractile tissues, semi-solid in those less so; further, that the granules of cells—animal and vegetal—are aggregations of the living, vital matter, and are intimately connected with each other by the delicate filaments of the same living substance; that no such things as isolated cells exist, since all cells are joined throughout the organism. Again:—

"Not the whole mass hitherto termed protoplasm [as a white blood-corpuscle] is endowed with properties of life, but only part of it—the living matter proper; . . . the living matter appears first in the shape of a solid homogeneous apparently structureless granule, which by growing, by taking in liquid, and by splitting into a reticulum becomes what has been termed protoplasm. Protoplasm, therefore, is only one stage in the development of living matter, and by no means its exclusive appearance under the microscope." (p. 33.)

But we are told (pp. 29–30) that the reticulum of living matter varies in condition, and is subject to visible change. Thus, when contraction takes place, the bioplasson accumulates at the nodal points or places of intersection, thereby forming larger masses or "granules" at these points, with an approximation of the latter and a shortening of the connecting filaments; extension, on the contrary, is accomplished by a decrease in the size of the granules, with larger meshes and greater delicacy of the net-work; likewise, when living matter becomes irritated and forcibly contracts, tetanic, the granules of the living matter are brought into contact, with a sacrifice of the net-work, which, in such conditions, is not to be seen. "Protoplasm," it is asserted, "shows differences according to its age" (p. 51); a "tetanic" condition being attributed to the youngest protoplasm, which is considered to be a compact mass of yellowish, lustrous, homogeneous bioplasm, presenting *no reticulum*.

In the development of young protoplasm, the first change is the appearance of vacuoles containing fluid; the latter accumulating, the living matter assumes the appearance of a frame-work, the points of intersection of which becoming granules, by a breaking down of numerous partitions dividing the vacuoles, the net-work is established, which represents a later stage of development.

"The more coarse, yellow, and shining, and the more densely arranged the points of intersection of the living reticulum are, the nearer it is to its youth; on the contrary, the more delicate, devoid of colour and lustre the granules are, the more advanced is the age of the protoplasm." (p. 52.)

In accordance with these views, "there are but four elementary tissues in the animal body. All these are interconnected and built upon one and the same plan." (p. 114.)

1. *Connective tissue*, in which the reticulum or net-work of the living matter contains, in its meshes, a more or less solid, nitrogenous basis-substance; the points of intersections of the fibres mark accumulations of the living matter, which represent the connective-tissue corpuscles.

2. *Muscular tissue*, in which "the reticulum of living matter at its points of intersection consists of more or less regularly distributed large prismatic, cylindrical, or granular thickenings (sarcoms elements) connected by filaments, while the meshes contain a liquid which admits of powerful contractions of the living matter in large territories." (p. 115.)

3. *Nerve tissue*, in which the living matter is arranged as a very delicate reticulum, with very small points of intersection (ganglionic corpuscles, gray matter), or as delicate solid cords (axis-cylinders), while the meshes contain a liquid, which allows the living matter in limited territories to contract rapidly.

4. *Epithelial tissue*, in which "the reticulum of the living matter is very delicate, and arranged in flat layers, which at certain regular intervals contain a horny cement substance." (p. 115.)

Therefore, "in no tissue whatever do there exist 'cells' as isolated individuals. Each tissue represents, speaking in the usual way, a colony of cells, in which one cell is uninterruptedly united by filaments of living matter with all and all with one. Each 'cell-colony' again is connected with the neighboring colonies without interruption, so that the whole animal may be considered as a single cell-colony." (p. 131.)

The doctrine, whose features have been presented, principally in the words of its author, is deduced, it has been seen, from the acceptance as a fact of the existence of this network of living matter in *living* tissues. For the preservation and hardening of tissues, Dr. Heitzmann considers "a wine-yellow solution (one-half per cent.) of chromic acid" the best means; for the staining of tissues the dye so generally employed holds but a poor place in his esteem, as he declares "all carmine staining is very unreliable" (p. 9), preferring silver nitrate and gold chloride as the most useful reagents in demonstrating the net-works of living matter, and throughout the volume these reagents are used, without exception, in demonstrating in tissues the peculiarities described.

Every practical worker knows from experience that these very reagents, while very useful for certain purposes, are notoriously uncertain and capricious in their action. Dr. Heitzmann's candour, however, does not permit him to deny this, as he later acknowledges that—

"the nitrate of silver and chloride of gold are not always reliable, and, I admit, had my assertions been based exclusively on specimens treated with these reagents, they would justly have been considered as nearly worthless." (p. 141.)

We are, then, for the present, justified in ignoring the appearances of tissues, which have been subjected to reagents, in weighing the evidence in favour of the doctrine under consideration; we must turn to observations upon the living and unaltered tissues if we would be convinced.

The assertions of our author as the result of observations on the living-matter of the amoeba and white blood-cell have already been stated. During the past few years the intimate structure of cells, especially of their nuclei, has received much study, resulting in numerous additions

to the literature of the subject. Among the observers mentioned in the elaborate papers of Flemming<sup>1</sup> and Klein,<sup>2</sup> the majority describe a fibrillar or reticular arrangement of the nucleus alone; Frommann, Kupffer, Eimer, and Klein, however, agree with Heitzmann in describing a reticulum in the substance of the cell itself—the intracellular net-work. The appearances described by these observers, as seen in the plates illustrating their papers, are by no means uniform, in some instances being the mere suggestion of a reticulum, as mapped out by rows of granules—very different from the structures for which we are led to search from the study of Klein's drawings. In confirmation of the assertions regarding the *amœba*, we are able to find but the observations of Bütschli<sup>3</sup> upon the *amœba blatta*.

Regarding the existence of fibres forming a more or less perfect reticulum in the nucleus, at least at certain times, the evidence seems conclusive, since we have positive declarations as to their existence from a number of observers regarding cells of various tissues, examined while perfectly fresh; indeed, Flemming<sup>4</sup> observed the net-work in the perfectly uninjured and living young of salamanders.

On carefully observing an active *amœba*, under a power of 1000 to 1500 diam., the following will be seen: the grayish granules of the protoplasm on entering a forming pseudopod frequently flow towards one side, and, on reaching the extremity, sweep round and back upon the advancing stream; the granules very often do not move with equal rapidity, nor do they always retain their relative positions, some granules moving with much greater rapidity than their neighbours, rushing ahead and reaching the end of the pseudopod long before their former companions; again it will be seen often that marked currents exist in the moving protoplasm, the granules of which move with considerable rapidity, while those immediately along-side will be nearly stationary; these currents sometimes divide, forming two or more diverging branches; the granules in their course may sometimes be seen to rotate on their axes in performing their wanderings. In the white blood-cells, when in active motion, all these phenomena may be seen, although in a less marked degree. To any one who has attentively observed these, it is difficult, to say the least, to reconcile these movements of the granules of protoplasm to the idea of the granules being but points in a reticulum; the movements of the granules so long as they retain their relative positions, can be explained by the varying conditions of contraction and extension of the reticulum, but it is inconceivable how a granule could so entirely abandon its former position, or rotate on its axis, while still enduring the connection we are assured exists.

It is of interest that Dr. Leidy, who, as is well known, has devoted much careful study to these low forms of life, and who is a recognized authority regarding them, stated to the writer, a short time since, that, although he had repeatedly examined various low organisms, and a host of cells of all kinds and from many sources with the special aim of viewing the net-work, he had as yet never been able to satisfy himself as to its existence in fresh, unaltered cells.

<sup>1</sup> "Beobachtungen über die Beschaffenheit des Zellkerns," Archiv f. Mik. Anat., Bd. xiii.; also Id. Bd. xviii. and Bd. xx.

<sup>2</sup> "Observations on Structure of Cells and Nuclei," Quart. Journ. Mic. Science, July, 1878.

<sup>3</sup> "Beiträge zur Kenntniss der Flagellaten und einiger verwandten Organismen," Zeitschrift f. Wissen. Zoologie, 1878, xxx.

<sup>4</sup> "Zur Kenntniss des Zellkerns," Centralblatt. f. med. Wiss., 1877, No. 20.

We ourselves, after many and oft repeated examinations, have failed to see the reticulum, either in amœbæ or in leucocytes. The optical appliances employed were of the best; the lenses used possessing excellent definition by central light, while readily resolving *amphipleura pellucida*; the white blood-cell being examined both on and without the warm-stage. While in several instances corpuscles were seen presenting what might suggest a reticulum, yet careful focusing, and a more accurate correction of the lens for the cover-glass, resolved the appearance into distinct granules. We are, therefore, compelled to record negative results as to the fruits of repeated, conscientious search for the net-work. Regarding the colourless corpuscles of human blood, Dr. Heitzmann is not quite clear in his statements, as we first find "no structure was recognizable in the shining, colourless corpuscles at the temperature of the room" (p. 26), a temperature of 30°–35° C. being necessary to exhibit the reticulum; subsequently we are assured that "it is not necessary to use the heated stage, because the colourless blood-corpuscles exhibit their structure in an ordinary comfortable temperature of the room." (p. 60.)

Regarding, however, prepared tissues, no one can doubt the appearance of net-works; we have unmistakably seen them in various cells of tissues prepared after Klein's method, as well as in preparations stained with hæmatoxylin, carmine, or gold. When the instability and great proneness to undergo change of living matter is recalled, as well as its great sensitiveness to all reagents, it is not without great caution and critical examination that the pictures found in manipulated tissues should be accepted as representing what exists in life.

In this connection the remarks of Cunningham<sup>1</sup> are of interest. While the subject of the paper is the special changes of the nucleus during division, what is written of the methods for the exhibition of the karyokinitic figures applies to the demonstration of the structure of the entire cell.

"The structure of the nucleus and cell, and the forms which the elements of the nucleus assume during division, can only be made out clearly in preparations which have been fixed and stained. The reagents which have been found most valuable for other histological researches are not always to be relied on for the demonstration of the karyokinitic figures. Strassburger fixed his vegetable tissues by placing them, while quite fresh, in absolute alcohol. Others have used salts of chromic acid, which are so useful for the isolation and definition of cells. Klein states he has found chromate of ammonium especially successful. Flemming, on the other hand, believes that all fixing reagents are more or less untrustworthy, except chromic acid, 1 per cent. solution, or saturated solution of picric acid."

In the course of the same paper is related an instance, which proves conclusively that the methods employed have something, at least, to do with the appearances of the minute structure. Between the observations of Strassburger and those of Flemming regarding the appearance of the dividing nuclei, there is considerable difference. Flemming, with the aim to prove the correctness of his views, "applied a crucial test" to the work of Strassburger, by restaining, according to his own method, preparations which showed exactly what Strassburger described, whereupon the latter's error became apparent, since the restained slides *now* showed the pictures upheld by Flemming.

It may be interesting to note that, as the result of a series of experi-

<sup>1</sup> "Review of Recent Researches on Karyokinesis and Cell Division," *Quart. Jour. Mic. Science*, January, 1882.



ments undertaken to determine the relative action of the various fluids and reagents in common use on albumen, solutions of chromic and picric acids were found to have an especial tendency to produce, by coagulation, fibrous net-works, often of the greatest delicacy and beauty, with meshes varying from comparatively coarse to those of such fineness that the higher powers were necessary for their satisfactory exhibition.

Strassburger<sup>1</sup> himself recently says, "Protoplasm consists of active albumen, and ceases to be protoplasm as soon as the albumen passes from the active into the inactive condition. . . . In all these instances the protoplasm exhibits a structure of a hyaline basis-substance and the imbedded granules."

But, after all, the existence or absence of a reticulum in living matter appears to the uninitiated as simply an interesting bit of "abstruse science," yielding little else than food for speculation. Dr. Heitzmann, however, holds very different convictions, for by the examination of the pus or white blood-cell alone is he enabled to determine the character of the patient's constitution; after the examination of "hundreds of cases, when pus-corpuseles, mainly in urine, were brought by different physicians to my laboratory for examination," he is able to delight in the satisfaction of knowing, "I was right in every instance; not one mistake has occurred." (p. 59.) A diagram follows, giving a representation of graded corpuseles from the various constitutions, to be the unfortunate possessor of the last of which admits of longevity but seldom.

The sphere of the microscope is extended even to the institutions of our social life, since "marriages should be allowed, in doubtful cases, only upon the permit of a reliable microscopist." (p. 61.) Our author proves that he is keenly alive to the beautiful in else than net-works, when he narrates the charming romance in which the champion of "the tube" plays such an enviable rôle in promoting hymeneal felicity.

We have already expressed the opinion that the description of tissues seems sometimes to be more ideal than real; the chapter on the red blood-corpusele, written by Dr. Elsberg, deepens this conviction. The burden of this paper is to prove that these cells contain a living reticulum, and undergo change in form identical with the white blood-cells: in order to demonstrate these remarkable properties of the red blood-disk, a strong solution of potassium bichromate is used, which by a process of "paling" allows the previously masked net-work to become apparent. Shortly after the first appearance of Dr. Elsberg's paper, we repeated his experiments, when we satisfied ourselves that the appearances were altogether artificial, and could be produced by other solutions, since by those of chromic, picric, or tannic acids identical pictures can be obtained, and that, in fact, the appearance is but a variation of the well-known effect of certain acid; by decreasing the strength of the solution of the bichromate, pictures are produced identical with those from a one per cent. solution of tannic acid.

From the connective-tissue group are the most plausible arguments of the Bioplaxion doctrine derived, since the well known anastomosing branches of the cells in many of these tissues forming the beautiful net-works lend a plausibility to the assertions not elsewhere found: when, however, we are told that the epithelium incloses our body, as do the boundary-threads of the net-work of the amœba, with a shell of living matter; or that the dark elements of striated muscle are the living units, each con-

<sup>1</sup> "Ueber den Theilungsvorgang der Zellkerne und das Verhältniss der Kerntheilung," Archiv f. Mik. Anatom., Bd. XXI. iii.

nected with its neighbour; or that epithelial and endothelial cells possess their greatest difference in their location; or that the well-known lymphatic channels of connective tissues have no existence; or that young masses of living matter, as leucocytes, have their origin by a budding from the fibrous bands of adenoid tissue, we must be allowed to pause and thoroughly weigh the value of the evidence, before we discard our present histological beliefs by accepting those proposed instead.

It may be mentioned, that throughout the greater part of the volume our author adopts the term "plastid" of Heckel as preferable to the familiar word "cell;" in spite, however, of high authorities, many a scheme of speculative biology will be proposed and be forgotten, before the term "cell" will cease to represent the anatomical unit, be our understanding of the real significance of the word never so changed.

During the discussion of the volume before us, space has forbidden more than a consideration of some of the chief points regarding the assumed facts and principles upon which the Bioplaxion doctrine is founded; to the book itself we must refer those, who may be interested in learning the specific adaptation of the theory to the individual tissues.

The earnestness, labour, and ingenuity displayed in the production of the work, by Dr. Heitzmann and the gentlemen associated with him in the volume, deserve well-merited praise. A feature well worthy of congratulation is the illustrations: these, nearly four hundred in number, are without exception from the pencil of Dr. Heitzmann, whose well-known skill is alone sufficient guarantee for their artistic excellence; it is, indeed, a rare treat to close a book of over eight hundred pages treating of histology without having encountered a single member of the family of old, well-worn cuts, which serve with such time-honoured prestige on so many varied occasions. While at some of the illustrations one's memory of histological experience comes to fault, yet their very strangeness lends the fascination of novelty.

While we confess that it would be with reluctance that we would place the book in the hands of the beginner as a guide, yet, we believe, every one deeply interested in histological studies will derive much information from its careful perusal. Whether the statement of our author that "my assertions have since been corroborated by all good observers" has been justified, time and unbiased investigation alone can decide; at present, in our own country, his doctrines certainly have not found a ready acceptance. Dr. Heitzmann, however, in the preface has expressed his anticipation of a tardy approval, and his willingness to wait without disappointment for the success which he feels confident will reward his patience, the knowledge of which has greatly mollified the unpleasantness of recording the adverse criticism which conscientious performance of our duty imposed.

G. A. P.

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ART. XVII.—*A Treatise on the Science and Practice of Medicine.*

By ALONZO B. PALMER, M.D., LL.D., Professor of Pathology and Practice of Medicine, and of Clinical Medicine in the University of Michigan, etc. etc. Vol. II., 8vo. pp. 866. New York: G. P. Putnam's Sons, 1882.

THE second volume of Dr. Palmer's work commences with quite an extensive description of usual methods of physical diagnosis. So far as

he has given it to us it is written with clearness, and will enable the student to acquire a fair knowledge of those subjects which shall become at a later period a necessity of every-day practice.

Whilst we have remarked little to criticize in his opening chapter, we question whether the thirty-seven pages thus utilized might not be left out entirely of a treatise on the practice of medicine.

We cannot wish a considerable portion of such a volume to be devoted to mere methods of examination and to matters of general symptomatology. As they are most important in the acquisition of every medical practitioner, we believe he had better at first be referred to special works on the accurate methods applied to physical investigation. Two tabular synopses of the percussion sounds and their significance are borrowed from the work of R. E. Thompson, Physician to Brompton Consumptive Hospital. These are valuable, and unless the author could offer an evident improvement upon them had the acquired privilege of being reprinted.

The author states, page 12, that in percussing instruments he has never found one so entirely satisfactory "as a common stethoscope with a groove around the margin of the ear-piece, in which is placed a ring of rubber." To our comprehension this would seem to be a most unwieldy instrument, and scarcely to be recommended. At best a pleximeter other than the finger, or a hammer different from the one nature has provided in the middle finger of the right hand, appears to us difficult to imagine. In this entire chapter on Physical Diagnosis there is not a single wood-cut of any one of the usual instruments made use of in clinical investigation. This we consider an important omission for those who have perhaps never seen these instruments, or if they have seen them still require a written description, in order that their knowledge may be complete.

Under auscultation the change in the ordinary respiratory murmur is well presented. In speaking of adventitious health sounds the author properly directs attention to the fact that different writers, by employing different terms to express the same idea, may give rise to apparent discrepancies when none in reality exist. This ambiguity may be avoided by a clear definition of terms in the beginning of a work.

We are glad to remark that the author in his description of dry and moist râles gives a clear explanation of the seat and mechanism of their formation. To those who are familiar with the doctrine of "pleuritic râles" in its too wide extension, this is a commendable fact. Whilst the importance of physical signs in the detection of disease is highly considered, that of rational symptoms is not undervalued. A short and fruitful chapter on the general vital symptoms of respiratory diseases is, therefore, included.

As we have remarked, in the first volume of Dr. Palmer's treatise, certain expressions mar "the general impression of good work." The following is an example: "In dyspnoea speaking is frequently arrested to 'fetch a breath'; the patient cannot 'hold the breath' long" (p. 39). Speaking of an "*unavailing*" cough as "one produced by a morbid process in the organs rather than by the presence of materials to be removed from them" (p. 40) seems to us to require further explanation, and we should, indeed, like to know what these pathological conditions may be. We quite agree with the author when he enters a plea for continuing "to feel the pulse" and estimating its changes as a most practical method for learning the condition of the circulation. We doubt very much whether the use of

even the most perfect sphygmograph will ever completely supersede it in ordinary clinical examinations.

The author, however, wishes to be thorough and ahreast of recent advances, and claims for the thermometer all that its most ardent disciple could wish. To sum up his convictions in these regards we use his own words: "The rational symptoms should be examined as though there were no physical signs, and the physical signs as though there were no rational symptoms."

Now follow two hundred pages on "particular diseases of the lungs and their appendages."

In the treatment of acute nasal catarrh a pill composed of quinine, camphor, and belladonna is employed with success. Judicious exposure and active exercise in the open air are advised as prophylactic measures against taking cold. With some persons daily shower-baths seem to lengthen its duration if it be already present.

We demur to the statement that chronic coryza is often associated with a strumous, or syphilitic dyscrasia, since in the very great number of instances it is impossible to detect any constitutional disease at all. The pathology of this affection is certainly defective, and the warty excrescences of which the author speaks we have never seen. In speaking of fetid coryza the author affirms that "the odor may arise from the deposit of calcareous matters from the secretions." We remark with pleasure that precautionary counsels are given as to the use of the nasal douche, and that its detrimental action upon the ears is referred to. To arrest epistaxis the author suggests the propriety of dashing water upon the neck, or upon the genital organs!

Twenty-three pages are devoted to diseases of the larynx and trachea. It is stated that an inflammation may commence in an adjacent part, and extend to the larynx, producing the symptoms and alterations of acute laryngitis. Certainly this is a very rare mode of development, and in a tolerably large experience we do not remember to have seen an example of it. In the pathology it is described as giving rise to pus, and "sometimes fibrous, corpuseular, and plastic exudations occur." The author relies on quinine and morphine at the commencement of the disease to modify its march, and occasionally to abort it. He speaks of the repeated use of inhalations of steam, but merely attributes to them about the same value as if the case were one of inflammatory tonsillitis. If the dyspnoea become very intense and the situation alarming, tracheotomy is offered as a harmless operation.

We remark that the view, also taken by Prof. Bartholow, that membranous laryngitis and diphtheria are distinct affections is here ineuleated. We regret this the more, because we are satisfied from recent reports of cases that very often diphtheria is occasioned by membranous laryngitis, and that the lives of many children have been sacrificed by reason of a false doctrine which teaches the non-contagiousness of membranous laryngitis, and the non-identity of this disease and diphtheria. Why should the confusing terms of false and true croup be any longer preserved? Has it not already been shown many times that these terms have led to many errors of interpretation among physicians and laymen? Let us then abandon their use altogether.

In the treatment of membranous laryngitis the author names many different methods, but leaves us really at a loss to know which he prefers. At least this statement is true of local applications by means of sprays,

the brush, or vapourized inhalations. In regard to general treatment he states he has most confidence "in a combination of quinine and morphine, in doses large enough to obtain its thorough *relaxing, soothing, diaphoretic*, and *antipyretic* effects" (p. 68).

In a digression upon the structure, function, and pathological changes of the parts involved in bronchitis the author borrows largely from a late article by Dr. J. Hamilton of Edinburgh. In this place, as well as throughout the volume, whilst certain individuals are at times credited with important statements taken from their published writings, it is very infrequent that the author gives a distinct reference by which the reader, if he so desires, may refer to the original source of information. In speaking of the treatment of acute common bronchitis the author allows himself too much license in writing for a formal didactic treatise. This, it appears to us, is well exemplified in the following lines where tartar emetic is the subject of his story: "The human constitution and its ordinary diseases have not changed, and tartar emetic is the same as in the days of Laennec, when it was so highly recommended; or as in the time of the brief surgeon-generalship of Hammond, when its use in whatever conditions was especially forbidden in the United States Army." We fail really to see the occasion of this explosive and somewhat personal remark.

We must again take a little exception to the manner of writing formulæ so characteristic of the writer. As an example we take the one which appears very prominently on p. 122, and which is given "as a specimen."

R: Oil Turpentine	$\tilde{ss}$
Tinct. Opium	$\tilde{ij}$
Pulv. Gum Acacia	
Pulv. Sugar	$\tilde{ss}$
Iodide of Potassium	$\tilde{ij}$
Aqua Camphora	$\tilde{ij}$
M. ft. emulsion.	

We venture to believe that a second year's student would be taken severely to task for writing such a mixture of English and Latin, and no regard to ease in either language. If the example cited were isolated we should not feel called upon to mention it, but it is in reality a sample of the formulæ as we find them given in many places in this text-book.

In the treatment of acute pleuritis when the effusion is large Dr. Palmer approves of the withdrawal of fluid by means of the aspirator. In this connection we should have been glad if he had mentioned the improved form of Potain's instrument with which there is no danger of wounding the lung. In chronic pleuritis the author holds that the radical operation is preferable to tapping with the aspirator "in some cases." We believe that the percentage is a very large one, and we cannot recall an instance in adult life where even repeated aspirations of fluid had cured the patient. With children it is somewhat different, and Bowditch, Lewis Smith, Blake, and others allude to frequent cases in which opening an intercostal space with the scalpel was never required. For some experienced surgeons, as we know, even the incision of the chest wall does not allow good drainage, and to obtain it in a sufficient degree resection of a portion of one or more ribs in part is strongly advocated.

In the pathology of asthma no mention is made of some of the later theories of Traube, Duchenne, and Bamberger. Nor are the physiological experiments of Rügenberg, who has shown that irritation of the vagus does *not* cause contraction of the bronchial tubes, even alluded to. If

Salter's old theory is still adhered to, Paul Bert's experiments should be at least given in their support, feeble though this latter be. Bert only acknowledges a *slow* contraction of the bronchial muscles by irritation of the pneumogastrics, and declares it to be insufficient to account for the spasmodic attacks of asthma. Perhaps one of the latest theories of asthma, that of Prof. Weber of Halle, is also one of the best, viz., asthma is a vaso-motor neurosis, and conjoined with it we have congestion of the entire bronchial mucous membrane.

In the treatment of hæmoptyses Dr. Palmer speaks highly of the use of ergot given internally in large and frequently repeated doses. He also adds that "what is still more efficient, ergotine in proper doses may be given hypodermically." We strongly urge the importance of this teaching. In very profuse cases of hemorrhage from the lungs what is absolutely required is as prompt and efficient action as possible towards the arrest of bleeding. In no other way can this result be achieved so brilliantly and successfully as by the hypodermic use of ergotine. The *proper* dose for us is, however, a large dose, and we should not hesitate to inject five grains at one time. It is sometimes a matter of imminent vital importance to the patient, and no dallying is possible.

The six varieties of pneumonia, as described by Dr. Frank Delafield, are given, and the distinction between the primary and secondary forms is strongly insisted upon. In the pathological changes of the disease the author culls freely from the article of Juergensen, in Ziemssen's Cyclopædia, and in this he has done well. He has also acted with much judgment when he separates himself from this authority on the subject of etiology. To attribute almost all cases of pneumonia to a specific cause, and to declare its absolute independence of chilling, is not good doctrine, and we believe with our author that pneumonia, in some instances at least, is clearly the result of exposure. His views in regard to blood-letting in this affection are recorded in these words: "That I have seen great temporary relief afforded by bleeding I can most positively assert. That in some cases of sthenic pneumonia, in the *early* stages, permanent good has been done I believe. . . . As a general practice, however early in the disease or vigorous the patient, it is, at least in most cases, unnecessary, and I would not resort to it."

The author reports the views of Prof. Gustav Huguenin, of Zurich, in regard to the efficacy of the cold bath in the treatment of erupous pneumonia; also reference is made to the recent use of the "cold pack" in this disease at Bellevue Hospital. He does not, however, consider the question as to the propriety of this treatment as finally settled. The author endeavours to reconcile the opinions of Flint, Bartholow, and himself, who hold that large doses of quinine cure about a certain proportion of cases of pneumonia, with those of Juergensen who denies this effect in this manner: "His practice, upon which his facts and his statistics are based, has been in the hospital of a large city, while such private practice as he may have had has been in consultation. In such practice one very seldom sees pneumonia in its early stages." The question of phthisis pulmonalis, in all its different varieties, their course, pathological anatomy, symptoms, and treatment are fully discussed, and the author gives some personal views, both as to its nature and treatment, which we should be glad to report *in extenso*, or to summarize, if space permitted. This we should do, not because we consider them very remarkable for novelty, but they are characteristic in some sense of the work, and would give an excellent idea of

Dr. Palmer's somewhat peculiar views in regard to subjects of great importance to all practitioners.

One hundred pages are devoted to diseases of the heart. The development, anatomy, physiology are first considered. Then there are some sixteen pages assigned to the physical exploration of the heart, its methods, and the results obtained. Finally, particular heart diseases are described. In regard to ulcerative endocarditis we could wish that a little attempt were made to give even the smallest details in regard to the history of this affection on account of its great interest and the doubts which prevail about its causation. In speaking of valvular affections the author states very emphatically that murmurs do not always accompany these lesions. Only a short time ago, a specimen was presented at the New York Pathological Society by Dr. Beverley Robinson, in the discussion of which this opinion was sustained by him. In speaking of dilatation of the heart we do not find any mention of the fact that many cardiac murmurs formerly believed to be hæmic in their nature are unquestionably due to temporary enlargement of the heart's orifices. We are glad to remark how highly the use of iodide of potassium is commended for its utility in relieving the painful symptoms occasioned by the presence of aortic aneurism, and also for its evident curative effects in many instances.

Some physiological and pathological observations are introduced before entering upon the study of each distinct renal disease. In the milder as well as in the severer forms of nephritis, "an almost or quite exclusive milk diet is beyond question the best." In speaking of transient albuminuria (læmatogenic albuminuria) the author believes that more depends upon changed structure of the kidney than upon that of the blood, or the action of the vessels. He also believes every case to be of importance as indicating probable kidney disease even though the patient be in apparent perfect health at the time when albumen was first found to be present in the urine. Diseases of the male sexual system comprise descriptions of spermatorrhœa, and impotency.

We now reach the most voluminous division of this volume. More than three hundred pages are assigned to the presentation of the different diseases of the brain and nervous system. Ten pages of general considerations precede, and then we have detailed accounts of diseases of the brain and its envelopes, commencing with abnormalities of circulation. The pathological anatomy is usually very incomplete and unsatisfactory, and there is little of consequence said in regard to the most interesting and important subject of cerebral localization.

Diseases of the spinal cord are scarcely brought to the level of most recent knowledge. In this department we should judge the author's acquirement to be limited, and his experience not very extensive. The article on locomotor ataxia is fairly good, however, and Rosenthal and Gowers have been placed under frequent contribution. Half a page is given to the pathology of progressive muscular atrophy, and it is concluded that whenever the muscles are advanced far in degenerative changes, they are rarely much improved.

In speaking of the treatment of chorea the author properly remarks it should be borne in mind in estimating the value of any special kind of treatment, that there will always be a certain number of spontaneous cures. In his own practice he does not attach as much importance to specific measures for arresting the chronic state as to carrying out thoroughly the rational indications which are the outcome of its consideration.

Further researches will be required in hysteria to establish firmly the characteristic pathological lesions of the disease.

Dr. Palmer recommends nerve stretching in the treatment of neuralgia with only very moderate enthusiasm, and claims that Billroth is to a certain degree abandoning the method even though he was one of its first ardent champions.

The author's remarks about the treatment of neurasthenia by rest, food, and massage are worthy of being reported in full. I will simply make this excerpt. "The change of associations and surroundings, the enforced regulation, the mental control, the passive exercise, and the free diet, it cannot be doubted will often have a great effect in breaking up morbid habits and restoring lost vitality." A chapter on diseases of the mind, including insanity, terminates what Dr. Palmer has wished to record on the subject of nervous affections.

We have a short and final chapter on human parasites, and the work terminates with a tolerably copious index.

In concluding this review of the second volume of a treatise upon which the author has expended a large amount of labour, we scarcely know how to place it. It is a more complete work than that of Bartholow, but less so than that of Flint. The general style of the work is inferior to both. What there is of pathology seems to be largely borrowed material. There are no wood-cuts either of instruments or morbid changes of tissues.

The clinical history of different diseases is sometimes quite full, but oftener lacking and unsatisfactory. Diagnosis is certainly not more to be commended than the other sections referred to. In the treatment the author has evidently expended his forces. The minutiae are often considerable, but they are not generally convincing by reason of the manner in which they are presented. The author wishes evidently to fill a gap in what he considers to be the best therapeutical measures adapted to the care and cure of American patients in contra-distinction with those of Europe. It is a difficult task he has given himself, and for this reason we should perhaps be liberal in our criticism. After all, what the work requires most is a very thorough *resetting*, and by this we mean a wholly different manner of writing the English language, and a resemblance to what pervades the other two works we have cited on Practice. In them reading medicine becomes a pleasure on account of the lucidity of the expressions and the perfect aptness of the diction. We should like to bestow similar praise on Dr. Palmer's work, but cannot truthfully commit ourselves to any such statement.

The typography and general appearance of the work are creditable to the publishers.

B. R.

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ART. XVIII.—*Transactions of the Obstetrical Society of London.* Vol. XXIII., for the year 1881. London: Longmans, Green & Co., 1882.

THIS is one of the smaller volumes of the Society's Transactions, the text covering less than 300 pages. The presidency of Prof. W. S. Playfair expired with the meeting in February, and the honour was conferred upon Dr. J. Matthews Duncan, formerly of Edinburgh, and one of the five "Honorary Fellows" of the Society. There are about 750 Fellows



on the roll of the Society, and their average attendance at the ten meetings of the year was 46.

*Double Ovariectomy.*—Dr. J. MATTHEWS DUNCAN reported a case which resulted favourably; the subject being a widow of 55. Tumours, multilocular cysts, left  $12\frac{1}{4}$  ounces, right  $15\frac{1}{2}$  ounces; latter adherent to uterus, bladder, and contiguous parts. The disease was associated with ascites; patient tapped four times; largest amount removed, Oxxviii; no malignancy in the case.

Of double operations, Koberle is reported as having had 12 per cent., Wells 6 per cent., and Keith 5 per cent. The general opinion is that the risk is doubled in such cases.

*Delivery in a Case of Double (Partitioned) Uterus.*—The same writer reports a case of this rare form of duplex womb; one in which the organ is, to external examination, single. The woman gave birth to nine children naturally. In some of her pregnancies she menstruated profusely from the empty side of the uterus, and was thought to be threatened with a miscarriage. Dr. Duncan discovered the uterine septum in searching for a portion of detached chorion. The partition reached down to the inner os, as in Kussmaul's plate. A bimanual examination on the twelfth day failed to detect anything abnormal in the outer contour of the uterus. Some of the claimants for the delivery of Fallopian pregnancies through the uterus may some day find the mystery solved by discovering the existence of a *uterus subseptus*.

*Pregnancy with a Double Uterus and Vagina.*—Dr. J. BRAXTON HICKS discovered this anomaly in a woman four months pregnant, having the appearance of a tumour in the right inguinal region, and being suspected of extra-uterine fecundation. A vaginal examination decided her true condition, and her labour took place naturally at term, the accoucheur employed not detecting the peculiarity of the uterus at the time.

*Extra-uterine Pregnancy; Death from Rupture of the Cyst.* Case (with specimen) reported by Dr. BRUNTON.—The woman, aged 31, was the mother of five children, and had ceased to menstruate two days before the rupture, which resulted directly from a fall. The cyst was in the right Fallopian tube, about an inch from the uterus, and contained an embryo computed at six weeks. She died of internal hemorrhage in nine hours. Dr. Brunton did not see the woman until five and a half hours after the rupture, and too late to save her by gastrotomy, ligation and removal of the cyst, and cleansing the abdominal cavity from blood. The reviewer has met with cases of this accident in his own patients three times, with one recovery. In a fourth case, a consecutive abdominal pregnancy resulted, and the patient was saved by *secondary laparotomy*, with removal of the fœtus. The attempt to save a woman in extremis from hemorrhage, by ligating the bleeding cyst, has only been made once as yet, but it was too late for success. In two cases known to the reviewer, there would have been ample time, as one lived twenty-three, and the other sixty hours.

*Villous Degeneration of the Endometrium.* Case reported by Dr. D. C. MACCALLUM, of Montreal.—Mrs. H., 51, married twice, but had never borne a living child, aborted at the fifth month twenty years ago. Mother had melanotic cancer of the eye; no other malignant case known in the family. Menopause occurred at 45, after which there was leucorrhœa for several years. Three years ago, noticed a bloody discharge from the vagina, which, in time, became profuse, and she entered the Montreal

General Hospital in October, 1879, where she remained three months, during which time she had several attacks of hemorrhage. In the intervals, there was a free discharge of a grayish colour, which became very offensive in December, 1879, and continued so until her death on July 17, 1880. She was not in hospital from Jan. 8, to May 13, 1880. She was then emaciated, sallow, and of a cachectic appearance. On June 9th the uterus was dilated with laminaria tents, and found filled with villous projections. These were removed to the amount of a tablespoonful by a curette, and the uterine cavity swabbed with fuming nitric acid, which arrested the hemorrhage. It was difficult to determine the precise nature of these villi, but they were probably malignant in character, from the progress of the case.

There was no bleeding after the scraping and application of nitric acid, but the offensive discharge continued. After the woman died the uterus was found filled with villi of a reddish-gray colour, confined to the cavity of the body. These were easily detached from the proper tissue of the uterus. The disease was confined to this organ.

*Of the so-called "Missed Labour," with a Case in Illustration.* By ROBERT BARNES, M.D.—The term "missed," as applied to labour, has been used in several forms; the questions to be considered are, "1. Can the *fœtus living at term* be indefinitely retained in the uterus? 2. Can the *fœtus dying some time before term* be indefinitely retained in the uterus?" In illustration of these points, Dr. Barnes reports the following case:—

Mrs. B., æt. 39, had borne three children, all dead, last one five years before, December, 1872, when she consulted Dr. Veitch. Her catamenia had ceased in October, and this was followed by morning sickness and other evidences of pregnancy. Distinctly felt quickening between third and fourth months. Up to seventh month felt what were attributed to *fœtal* movements. Between eighth and ninth months, there was a flow of blood from the vagina, and labour was supposed to have commenced; no labour-pains set in; os undilated and almost out of reach. Under rest and the use of cold and styptics, hemorrhage ceased in a few days, to return very decidedly in three weeks. Still no labour-pains. Under treatment, discharge gradually ceased, and auscultation revealed no sounds. Early in September (eleven months) uterus, felt through abdominal walls, appeared more round and dense than usual in pregnancy, with an irregularity in its body, on the left side; os high up, soft, and yielding to the touch.

The patient's health had remained good until about ten days before this examination by Dr. Veitch, when her appetite failed from emotional causes, and a slight return of hemorrhage occurred. Three weeks later she had another return, apparently from a disappointment.

Mrs. B. was placed under the care of Dr. Barnes in December, 1873, when the uterus simulated in character a fibroid tumour, for which it had been mistaken. Under chloroform, and dilatation with laminaria tents, the uterus was found to all appearances empty, being smooth-lined, and measuring six inches in depth. In January, 1874, after a continued coloured discharge, pieces of bone began to escape daily, which proved to be portions of spinal column. On 23d, after dilatation, three more pieces were found within the cervix, and, in consultation with Mr. Spencer Wells, a compressed *fœtal* mass, with bones on its surface, was detected within the cavity of the uterus proper. In February, Dr. Barnes extracted portions of the *fœtus*, in a greasy, soft, putrid mass, with protruding bones, by

means of his craniotomy forceps. The fœtus appeared to have reached the eighth or ninth month of gestation. By the aid of intra-uterine injections of chlorozone, the placenta, which broke down in shreds, gradually came away, and by March 10th the uterus was reduced to five inches in length. More placental tissue was still discharged for some days. By May, the uterus was of normal size, and menstruation returned.

Dr. Barnes believes this to have been an intra-uterine gestation, and not one where the fœtus had made its way into the cavity of the organ by ulceration. This he feels confident of, from several bimanual examinations during the progress of the case. He believes that the fœtus died at about eight months, and that, for some unaccountable reason, true labour as indicated by uterine pains, never occurred; the explanation of which phenomenon will depend upon what we conceive to be the determining cause of normal labour at term. As the close of gestation varies somewhat as to time in different subjects, and pain is not an essential of labour, the reasoning upon the causes of expulsion and non-expulsion of the fœtus at maturity of time, whether dead or living, must of necessity be more or less speculative. Dr. Barnes comes to the following conclusions, based upon our present state of knowledge upon the phenomena of labour:—

“1. The prolonged retention of a fœtus *alive* at term *in utero* is not yet established by authentic facts; and consequently missed labour, if understood to mean the retention of the fœtus *in utero* which had been alive at term, a distinct parturient effort being then manifested and passing off, is also not yet established by authentic facts.

“2. A fœtus dying at a præ-viable age *in utero* may be retained until the full term of gestation.

“3. The case related in this paper affords strong presumption, if not absolute proof, that a fœtus dying at a viable age *in utero* may be retained for an indefinite time; and that in this sense ‘missed labour’ may be admitted.

“4. The clinical histories of the cases known are not discordant with the following physiological theory: When a living child is *in utero*, the natural high vascular and nervous tension accumulating and reaching its highest point at the ordinary term of gestation, labour almost infallibly takes place under the irritation of the tenth menstrual process, and when the fœtus perishes before this period, that is, before the physiological and vascular tension has reached its highest point, the nervous centres and the uterus may resist the menstrual stimulus, remain quiescent, and thus the dead fœtus may be retained. The uterus thus comes to resemble in its behaviour an extra-uterine gestation cyst.”

The discussion which followed the reading of this paper, is one of considerable interest and importance in its bearing upon some cases of presumed *tubal* pregnancy in this country, in which it was claimed that the cyst emptied itself into the uterine cavity, and the fœtus was thence discharged per vaginam.

Mr. Spencer Wells, who saw the case of Dr. Barnes, was under the impression that it was one of *tubo-interstitial* pregnancy, and thought its subsequent history consistent with this view. He had seen a case in a lady, in 1880, that corroborated this opinion. She believed herself to be five months pregnant; eminent men thought her not in this condition, “because the cervical canal admitted the finger, and the sound could be moved freely to a depth of five inches.” The enlargement was decided by Dr. Penhall and Mr. Wells to be in the uterine wall, and the former under this belief injected ergotine into the substance of the cervix uteri; severe pain followed, and the fœtus was expelled, with recovery.

Dr. Roper believed that cases of so-called missed labour were originally intra-uterine and became by partial rupture of the uterine wall extra-

uterine, the fœtus being partly in a cyst formed outside of the uterine cavity, and partly within the cavity. "The first symptoms observed were those of pain; in every case the pains of *labour* were equivocal, and the commencement of these pains was coincident with some accident or external injury more or less severe." The fœtus at this time ceased to give signs of life and the pain subsided; then followed the history common to all—fetid discharge, putrilage and bones. In every case in which a post-mortem examination has been made there has been found an aperture in the uterine wall connecting the cavities of the uterus and the cyst, the aperture seeming to represent the original rent or weak point which had given way at the time when the first pains were observed. "The histories of the cases which have recovered are precisely like those in which a cyst outside the uterine wall has been found on post-mortem examination."

Dr. Gervis mentioned a case of extra-uterine pregnancy in which very unexpectedly delivery took place *per vias naturales* at about the fifth month. On introducing the hand for delivering the placenta a distinct cavity or pouch was found toward the left angle of the fundus, in which the fœtus had evidently lodged prior to its escape through the uterus.

This case resembles those where the fœtus has been developed in a rudimentary *cornu* of the uterus.

The accident related by Dr. Roper does not necessarily terminate the life of the fœtus, as shown by the Egan case of Louisiana, reported in the *N. O. Med. and Surg. Journ.* July, 1877, p. 35, and communicated also, as to certain particulars, to the reviewer. In this case the rupture took place on May 4, 1857, when the woman was believed to be four months pregnant, and labour began in November; os dilated; head presented; but there was no descent below the superior strait. Labour recurred at intervals under the care of a midwife for a month. In the fall of 1858 an abscess opened, leaving a fistula one and a quarter inch below the umbilicus, and the woman became emaciated and affected with hectic fever. For her relief Dr. Egan performed the Cæsarean section on August 25, 1860, when it was computed that she had carried the fœtus 42 months. The left foot and hand of the fœtus were found in a pouch on the left side of the uterus inclosed by bands which were cut for their liberation. The uterus was examined carefully to secure drainage through the os; the peritoneal cavity was not opened, as the uterus was adherent to the abdominal wall; the woman made a good recovery. Dr. Egan was confident that the fœtus was in the uterine cavity; the time of fetal death was not computed.

Dr. Galabin related a case in which there had been an attempt at labour at term, and he saw the patient two months later, when her symptoms were of a grave character, and there was an offensive sanguineous discharge from the vagina. The fœtus was delivered by the breech after dilatation of the cervix through what was taken for the internal os, but was really an opening in the anterior wall of the uterus at a point where the organ was sharply retroflexed. Had this woman recovered, her pregnancy would have been pronounced intra-uterine; but an autopsy revealed the fact that the fœtus had been developed in a sac lying in front of the uterus.

*Dermoid Cyst of the Ovary with transplanted pedicle.*—This was exhibited by Dr. KNOWSLEY THORNTON who had removed it from a patient who had borne four children after its discovery. The cyst was of the left

ovary; had been twisted off at the pedicle, and had formed a new attachment to the right side of the omentum. A cystic tube, the remains of the twisted pedicle, the tumour, and a cystic right ovary were removed: the woman recovered.

*Case of Delivery through an Imperforate Vagina.* By HERWOOD SMITH, M.D.—The author remarks that congenital imperforation associated with pregnancy is so rare, that he has only been able to find the records of two other cases, one in Paris mentioned by Cazeaux, and one in New York, by Isaac E. Taylor.

Dr. Smith's patient was aged 31, and had been married ten years; she was pregnant for the first time. A vaginal examination after thirty hours' labour, showed a vagina ending in a cul-de-sac, of an inch and a half in length, with a dilated urethra, but no uterine outlet. The uterus could be defined, with its os opened to the size of half a crown, and the head presenting. Labour advanced and the head came down. After thirty-two hours' labour the vagina was opened by the scissors, forceps applied, and a living female fœtus delivered. When the woman recovered, there was a perceptible ridge in the vagina at the constricted part. The deficiency of vagina was discovered by her mother, a trained nurse, in her childhood. Menstruation had been always painful. In an examination made before impregnation, Dr. Edis failed to discover, by touch or sight, any orifice. Probably an attack of vaginitis she had, had closed it.

*Case of Imperforate Vagina,* by PERCY BOULTON, M.D.—The subject was a married woman of 18, who menstruated with pain, followed by "green waters" for several days. The vagina was a cul-de-sac of the depth of the last case, and small openings were found around a central adherent portion where the anterior and posterior vaginal walls were united. This was cut through by a cord écraseur, and the parts were kept separated by a vulcanite plug for three weeks until healed over. The uterus was normal.

*Cyst of the Great Omentum.*—This was removed by Dr. BANTOCK from a woman of 58, who had been tapped several times, and had also experienced the rupture of the cyst, two years before. Woman progressing favourably at time of report.

*Placenta Prævia, covering in its Attachment a Large Myoma.* Case reported by J. HICKINBOTHAM, M.D., Birmingham.—The patient was a small, delicate, young secundipara, who had been in labour at term about six hours when Dr. H. was called in. She had previously aborted; and was now evidently in danger from hemorrhage, as the placenta was implanted over the os with no edge within reach. A hard body could be felt through the placenta, which was supposed to be the fœtal head. On breaking through the placenta, this was found to be a tumour, upon which the after-birth was seated. To deliver the fœtus, the placenta was separated and removed, after which the child was turned and brought down, and the head extracted, for want of working space, with a crochet. An attack of septicæmia followed, from which she recovered; after which the tumour sloughed, protruded through the os, and was extracted, of the size of a small orange. The uterus recovered its normal size, and the patient, though still anæmic, was in a fair way to a complete restoration of health.

Dr. BARNES remarked that, in very extreme cases, it might be necessary to perform the Cæsarean section, and recommended the removal of the uterus with the tumour, as in the Porro modification.

It is well known that tumour cases, whether intra-uterine, extra-uterine,

or pelvic, in which the Cæsarean section, Porro-Cæsarean section, or its modification by Müller, has been performed, have thus far been among the most fatal in our records, first by hemorrhage and shock, and secondly from septic poisoning.

*On the so-called Lithopædion.* By ROBERT BARNES, M.D.—Two questions are considered in this article, viz.: 1. Is there ever found a true lithopædion—*stone-child*? 2. Does calciform degeneration or transformation of the fœtus ever take place in utero? Both of these are answered in the negative. The retained fœtus *in utero* undergoes a shrivelling or mummiform change, or is converted into an adipocerosus formation. This is seen in cases where one twin dies early, and awaits the delivery of the other at maturity. An extra-uterine fœtus may be retained for many years, and undergo in time a species of partial calcification. Of this change, Dr. Barnes writes as follows: "1st. That the chief process of calcification takes place in the cyst-walls and foetal membranes. 2d. That in a minor degree calcification takes place in the integuments of the fœtus, which in part coalesce in calcification with the envelopes and cyst-walls. 3d. That the deeper structures of the fœtus, including the viscera, become more or less impregnated with lime salts, without, however, becoming hard or stony. . . . It seems probable that the process, in these cases of apparent foetal calcification, is first, the death of the fœtus; secondly, the calcification of the envelopes and sac-walls; thirdly, the partial change of the fœtus into calcareous matter, but never amounting to stone-hardness, as in the case of the envelopes, this hardening being prevented, partly, at least, by the protection against removal of the fluid elements of the fœtus by the closeness and density of the investing calcareous shell." Fœtuses have been retained in extra-uterine cysts for more than half a century, without foetal calcification having become complete. The term *Lithopædion* is an entire misnomer, and has arisen partly from the fact that a calcified fœtus, after having been dried, could be sawn in two; and there is extant an engraving made to represent the sawn surface, with its peculiar convolutions looking like a complete calciform transformation.

*Non-capsulated Fibroids, resembling Retained Placenta.* By JAMES BRAITHWAITE, M.D., of Leeds.—CASE I. Mrs. L. commenced to lose blood on the tenth day after delivery; her attendant examined her, and found what he thought was a mass of placenta, although this was entire at her accouchement. When removed it had the appearance of placental tissue; but being very intimately incorporated with the uterine wall, it was suspected of malignancy, and examined under the microscope, when it proved to be of a fibrous character. The woman recovered.

CASE II. Mrs. H. aborted at three months, and the ovum came away entire. Four days afterward she was examined in consequence of a hemorrhage, when what was suspected of being another ovum was discovered. This was found closely adherent, and was removed with difficulty. Under the microscope it was found to be composed of very loose fibroid tissue, upon which were numerous fungoid growths.

Dr. EDIS had met with a case where a submucous fibroid was the cause of a hemorrhage which followed an abortion at four months.

Dr. HERMAN gave an account of a case where the existence of a tumour was mistaken for a pregnancy, and in which the touch led to the belief that there was a placenta prævia; this view was concurred in by several eminent men. It proved finally to be a soft medullary cancer.

Non-capsulated fibroids in the uterine cavity are suspected of a disposi-

tion to recur, and may be found to approximate in character sarcomatous growths when examined microscopically. It will be a question of interest in the future to determine their real nature and danger.

*On the Relation of Antelexion of the Uterus to Dysmenorrhœa.* By G. ERNEST HERMAN, M.B., M.R.C.P.—The author, after a careful examination of the influence of antelexion in producing painful menstruation, asserts "that there is no anatomical evidence that antelexion of the uterus causes any hindrance to the escape of the menstrual fluid." He claims that, patients not dying from dysmenorrhœa, there is no means of determining positively the amount of obstruction, if any, produced by the flexure. He groups the arguments in favour of the connection between the flexure and dysmenorrhœa under four heads, as follows: "1. That drawn from the patient's description of her pain. 2. That from difficulty in introducing the sound. 3. That from the frequency with which dysmenorrhœa and antelexion are associated. 4. That from the effect of treatment." These points are all taken up and argued against at length as fallacious and deceiving. Upon the third point, he instances the frequency of the existence of antelexion as discovered in the autopsies of infants, young subjects, and nulliparous women, by Boulard, Lorain, Soudry, Goupil, Aran, and Richet; and in living nulliparous subjects, by several French gynæcologists at the Lourcine Hospital in Paris. Of 431 nulliparous adults, it was claimed that antelexion existed in 185; in 120 children examined after death, there were 72 antelexions, and 60 in 86 fetuses.

Of 111 women who had never been pregnant, and who were menstruating regularly, examined bimanually by the author, there was pronounced antelexion in 53. Of 43 with uteri nearly or quite straight, 16 had no pain in menstruating; 15, slight pain; 7, much; and 5, severe, so as to keep their beds. Of 14 slightly antelexed, 4 were free from pain; 5 had slight; 2, much; and 3 were a-bed. Of 30 antelexed to a right angle, 12 were free from pain; 9 had slight; 7, much; and 2 were a-bed. Of 23 in whom antelexion was acute, 10 had no pain; 6, slight; 4, much; and 3, severe, so as to lay them up.

The conclusions of the author are as follows: *From treatment*—"1. That dysmenorrhœa associated with antelexion is frequently cured without straightening the uterus. 2. That straightening the uterus does not invariably cure the dysmenorrhœa, and that there is no evidence that it does so frequently." *From general consideration of the subject*—"3. That there is no anatomical evidence that antelexion causes any appreciable hindrance to the escape of menstrual fluid. 4. That there is reason to think that well-marked antelexion is present in nearly half of all women who have not borne children. . . . 5. That dysmenorrhœa is practically as common when the uterus is straight as when it is antelexed. 6. That painless menstruation is practically as common when the uterus is antelexed as when it is not. 7. That when dysmenorrhœa and flexion go together, the severity of the pain bears no relation to the degree of the bending. . . . 8. That the relation between antelexion and painful menstruation is not that of cause and effect, but merely that of coincidence."

Dr. Gervis commended the care and ability of Dr. Herman in his investigations, but doubted if his deductions were valid, even if his facts remained unchallenged. Flexures were quite possible without obstruction in the cervical canal, but he believed that obstruction, however pro-

duced, would necessarily give rise to the characteristic symptoms of obstructive dysmenorrhœa.

Dr. Galabin objected that Dr. Herman made no distinction between obstructive and congestive dysmenorrhœa, whereas this might have been determined by the time of the pains. If permanent straightness, as held by Schultze, was a proof of induration, then congestive dysmenorrhœa might be more common in straight uteri. He also objected to the examination of prostitutes, as largely done by the author, as unsuitable subjects in proof of his claims, they having run the risks of uterine congestion and endometritis. He was surprised at the large proportion of antelexions found by Dr. Herman, and said that, in his own experience in virgins who came for treatment for amenorrhœa, the proportion was more nearly that given by Dr. Depaul, of six per cent. He thought the bimanual method of Dr. Herman an insufficient mode of examination to determine the line of the uterine canal.

Dr. Duncan thought that Dr. Herman, "by statistics and a mass of other evidence," had "brought his opinions far nearer to proof than those had done who held other views."

Dr. Herman, in reply, defended his method of examination as the most reliable for the determination of antelexion.

*On Shortness of the Cord as a Cause of Obstruction to the Natural Progress of Labour.* By J. MATTHEWS DUNCAN, M.D.—As the fœtus is designed to move freely in the genital passage, any connection therewith is a hindrance thereto. The cord may be of various lengths down to a sessile condition, in which the placenta may be upon, or even form a part of, the abdominal wall. In 24 experiments made directly after labour, Drs. Duncan and Turnbull found the tensile strength of the funis to be equivalent to the weight, on an average, of  $8\frac{1}{2}$  pounds, the extreme points of breakage having been at  $5\frac{1}{2}$  and 15 pounds. The cords were attached to the placenta, and varied from 10 to 25 inches in length. In 15 experiments the cord stretched from 2 to 15 inches before breaking under the weight; only one broke at the placental insertion, which was found to be, on the average, stronger than in any part of the removed portion. This measure of the strength of the cord is the equivalent of the force it can exert in preventing the exit of the fœtus. A long cord is not necessarily a free one, and its practical length is that of the free portion, between the placenta, and the part of the fœtus upon which it is wound. Shortened are much more common than short cords: shortness being relative, rather than absolute. In head presentations, a shortened cord about the neck is relatively shorter than the same length free to the umbilicus is in its check upon delivery. The shortening of the uterus in labour, by approximating the placenta to the point of attachment of the cord, relieves the tension, which would otherwise act as an obstacle to fœtal progress. In the first stage of labour the cord is practically, then, inactive as a check. In the second stage it will require a very short cord to obstruct delivery, but as the fœtus escapes, its removal from the placenta is more rapid than the approach of the placental attachment to the os uteri, and tension becomes more decided. Stretching of the funis may be sufficient to compensate for its tension, and a natural birth result; or if not, either the fœtus may be *evolved* upon the cord-attachment, or the uterus may be inverted. If not strong enough to produce these results, the cord may snap under the tensile force; or, as has happened, the snap and inversion may occur at the same time. In rare cases, the placenta may be partially separated



from the contracting uterus. Baudelocque gives a case of inversion where the cord was 7 inches long, and one where a cord of 8 inches snapped. In Newnham's case of inversion, the funis measured 10 inches, and in Smith's 6 inches. Baudelocque relates a case of relative shortness producing inversion, in which the cord encircled the neck twice, a leg three times, and an arm once.

The method of relief by a species of evolution appears to be the most common in cases of shortened cord. "Cords of 10 inches and under, are extremely rare," and it is probable that when the funis is free, this form of extension may be usually practicable. In one case noted by Dr. Duncan, a cord of  $23\frac{1}{2}$  inches was reduced practically to 11, by being twice around the neck; and birth by evolution after delivery of the shoulders took place. This would not be equivalent to 9 inches from the umbilicus as computed by the author, for the latter would not exert the same amount of influence in evolution, as eleven inches to the neck would.

Dr. J. Braxton Hicks reported a case of twins in which the cord of the first one was barely long enough to divide and tie, and that of the second only four inches, compelling him to cut it, which he did with an osteotome, the child being already dead.

Dr. Barnes doubted the evidence of there ever having been found a case of battle-door placenta with the cord attached to the edge most remote from the os. He recommended pressure upon the uterus to relieve the tension of the cord, and even cutting it when tight about the neck, so as to secure a rapid delivery.

Dr. Wynn Williams knew of two cases, one in his own practice, where the cord was suddenly ruptured at the navel, in delivery. Entering the room just as the accident happened to his own patient, he hooked out the vessels with a tenaculum and tied them.

Dr. Murray related a case in which partial inversion of the uterus was produced in consultation by pressure on the fundus uteri in assisting delivery by the forceps. On feeling for the placenta, the accident was detected and the part adjusted.

*Case of Conjoined Twins.* By PERCY BOULTON, M.D.—From the accompanying wood-cut, the foetuses were united sternum to sternum, and the first one presented in an occipito-posterior position. The mother was a small weak woman of 37, who had been pregnant eight times, and had always had easy labours. Fortunately for her on this occasion, she was not quite seven months pregnant, if her calculation was correct, when labour commenced. The first stage lasted three hours, the head being in the left occipito-posterior position. The second stage had lasted six hours when the midwife called for assistance, and Dr. Boulton applied the forceps. When the head and neck were delivered, the other head was felt above the pubes. The shoulders of No. 1 came down, and were delivered; then followed the body; and, finally, the legs of both subjects, the head of No. 2 coming last; both were females.

This has been the method of delivery in numerous conjoined subjects, the twins revolving around the symphysis, whether the union was upon the fronts or backs of their bodies: The births of the Siamese twins and the Carolina sisters having been on this wise.

*The Treatment of Spasmodic Dysmenorrhœa and Sterility by Dilatation of the Cervical Canal with Graduated Metallic Bougies, with Notes of Five Successful Cases.* By CLEMENT GODSON, M.D.—This is an old plan of treatment revived, having originated with Dr. John Mackintosh, of

Edinburgh, in 1826. More recent operators, among them Sir James Y. Simpson and Dr. Marion Sims, abandoned the method in consequence of dangers set up by slight laceration of the os, exciting inflammation of the uterus. Dr. Godson claims that dangers may be avoided, by passing in a succession of bougies of slightly increasing diameter at the same sitting, leaving each one in a short time, say five minutes. He uses for the purpose a set of eurved instruments adapted to one handle. Of ten cases of dysmenorrhœa in married sterile women, five became pregnant. In four of the others the dysmenorrhœa was cured, but they are not known to have become pregnant. The husband of one was seventy years old. In the tenth case, the cure was not effected until after she had worn a silver stem pessary and Wynn Williams's shield beneath it. The five women who became pregnant were aged, respectively, 32, 29, 22, 24, and 25; and had been married 4, 8, 2,  $2\frac{1}{2}$ , and  $3\frac{1}{2}$  years respectively. The sounds should not be used near to the time of menstruation, either before or after it, but at an intermediate period. In no case of the ten was there any stenosis, or constriction by acute flexion. R. P. H.

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ART. XIX.—*Medical and Surgical Reports of the City Hospital of the City of Boston.* Third Series. 8vo. pp. 390. Boston: Published by the Trustees.

WE gladly welcome this handsomely printed and illustrated volume of hospital reports, and hope that the excellent example of a wise liberality on the part of hospital trustees, to which it is a monument, will prove contagious throughout all parts of the United States.

The first paper is a careful and pains-taking essay by Dr. S. G. Webber, on the *Pathological Histology of the Spinal Cord*, to which is appended three highly creditable plates from camera lucida drawings by Dr. Webber, who sums up his conclusions as follows :—

“There may be, then, 1st. Acute interstitial myelitis with swelling of the fibres, nuclei, and cells of the neuroglia, with destruction of nerve-fibres and nerve-cells, leading to softening. 2d. Acute parenchymatous myelitis, where the nerve-fibres in the white substance are primarily or chiefly affected, myelinel and axis cylinders both disappearing, but the interstitial tissue remaining, seemingly not much changed; also cases in which the nerve-cells are chiefly affected, especially those of the anterior cornua, the nuclei and cells of the neuroglia being almost exempt from change, as in infantile paralysis and allied affections. 3d. Chronic interstitial myelitis, affecting the neuroglia, fibres, nuclei, and cells, in both white and gray substance, the nerve-fibres and cells being affected only secondarily, as in sclerosis. 4th. Chronic parenchymatous myelitis, in the white columns only, locomotor ataxia, or lesion of the posterior columns (and secondary ascending and descending degeneration possibly), is as yet well known; lateral sclerosis probably belongs to this variety. In the gray substance the cells are affected as in progressive muscular atrophy.”

Dr. Webber claims that there is as much reason to divide myelitis into the interstitial and parenchymatous forms, as there is to divide nephritis in a similar manner. It is to be regretted that our author's useful contribution to his important but obscure subject, should have its value marred by his neglect to inform his readers what amplifying power was used in

making the drawings. We would earnestly commend the veteran Prof. L. S. Beale's remarks upon this subject to Dr. Webber's attention, and hope for the credit of American microscopists that such want of precision as is manifest in the statement on p. 32 that, "figs. 5, 16, 21, are more highly magnified, 25, 26, 27, 28, less highly than the others," will not again be found in a scientific work emanating from the Athens of America.

Dr. C. Ellerly Stedman's article, *Notes on Typhoid Fever*, is well worthy of a more pretentious title, and should be carefully studied. It comprises the records of 1036 cases admitted into the City Hospital during ten years previous to January, 1881. Of these, 186 died, a mortality of about 18 per cent., but as 28 of the fatal cases were moribund when admitted, the actual mortality of cases treated in the institution was a fraction below 16 per cent. Our author makes an attempt on pp. 63-65 to show the results of treatment, but admits that the task is a difficult one, and its issue unsatisfactory. He concludes that 600 of the cases would have done well without any other treatment than milk, with diet and careful nursing. Of nearly 500 others, very many have been saved by the use of remedies under close observation. "In treating typhoid fever the thing to know is whether or not our patient needs the application of remedies, as distinct from food and nursing. My hospital experience has taught me the knowledge is imparted by the rapidity of the pulse, in all but a few cases." The highest pulse recorded in this series of cases in a patient who recovered, was 160 on the fourteenth day, the fever turning eight days after. The highest temperature was in a man aged 44, of 107° F. on the eleventh day, when his pulse was 109, the fever abating on the thirty-eighth day. In regard to the causes of typhoid, Dr. Stedman declares that contagion is not one of them, and that though it is a sickness which almost every one in New England has in childhood or in youth, its causes, except in epidemics which have been traced to contamination of the water supply, have yet to be made plain to him. In regard to treatment our author declares that for the last two years he has given fewer baths, because the success with them has not been so great as was anticipated from the reports of the German physicians, and experience has not persuaded him that cold bathing and antipyretic doses of quinine, shorten or cure the disease, although they do reduce temperature in a wonderful manner. Finally that if restricted to one remedy and one drug in the treatment of typhoid fever, he would choose the sponge bath and brandy for his pharmacopœia.

The next paper is a *Synopsis of fifty Medico-legal Autopsies* furnished by F. W. Draper, M.D., and is rendered appropriate for the City Hospital report by the fact, that many of the cases mentioned were under treatment in the hospital wards before they became the subject of post-mortem judicial inquiry. Several of the groups of cases reported present, as the writer remarks, tempting themes for special and extended comment, but want of space compels us to merely mention that five were in cases of peritonitis following criminal abortion, six of death by drowning, twelve of death by suffocation some of which presented quite curious features, eight by poisoning, and the remainder of death from various accidents, etc.

An interesting series of *Surgical Cases* by David W. Cheever, M.D., commences with the report of four successful instances of removal of bronchocele, in spite of which our author, we are glad to see, retains enough conservatism to remark, "if similar cases to these last present themselves again, I should urge the trial of at least six months medication with iodide

of iron and iodide of potash, the latter in eumulative doses, to absorb the glandular enlargement." Among other interesting histories in this series, we notice a well-reported case of cancer of the tonsil recurring after four successive operations and then abandoned as far as surgical interference was concerned; it is illustrated by two heliotype reproductions of camera lucida drawings, which would, however, be much more valuable had the magnifying power under which they were drawn been noted, as could have been done with so little difficulty; also if the same amplification had been employed instead of exhibiting the section of tumour nearly twice as much magnified as that of the normal tissue, if we may judge by the diameter of the voluntary muscular fibres (not fibrillæ as Dr. Cheever calls them on p. 147) which are cut transversely in the preparation.

Dr. G. H. Lyman's *Synopsis of Gynecological Cases* is made up from the histories and results of treatment of patients in this department of the Boston City Hospital for five years preceding January 1, 1881. It fully accomplishes its expressed object of informing the trustees and the profession as to the amount of work done in this important direction of medical effort, and indicates that the diligence and industry expended have been rewarded with a fair measure of success in relieving female suffering.

Dr. Robert T. Edes furnishes a timely essay entitled *High Pressure Education; its Effect*, in which he considers the subject of spinal irritation or neurasthenia, which he finds to some extent in the wards of the hospital and among the poorer classes, and considers is produced by the two opposite causes of underwork and overwork. The fact that, out of nineteen patients with this affection in the Adams Nervine Asylum, nine had been teachers, shows in his opinion that probably teaching is the one vocation to which more educated women who are obliged to earn their own living resort than to any other, and the further circumstance that out of ten of these patients whose cases might fairly be termed nervous exhaustion, seven had been teachers, certainly proves that teaching is one way of breaking down nervous strength. Dr. Edes very sensibly concludes that if as he believes:—

"Our system of education is responsible, both by omission and commission, for an important proportion of the chronic female invalids, the remedies are easily to be seen, even if not so easily obtained. They are: moderate and carefully regulated bodily exercise; less studying for prizes and more for knowledge; lesser demands upon teachers; fewer scholars; and, perhaps most important of all, lucrative employments beside teaching which shall be considered respectable for women."

Skeleton notes of thirty-nine *Cases of Diphtheria* occurring in the service of Hall Curtis, M.D., form the next article. Most of these patients came from houses upon damp soil, and the majority from houses where other cases of diphtheria, some of them fatal, had occurred. The mortality was only about ten per cent., and the chief variation from the usual treatment appears to have been that of thoroughly painting the pharynx every two hours with compound tincture of benzoin.

The disputed question of resort to *Optico-ciliary Neurotomy* as a substitute for enucleation of the eyeball is the subject of the next paper by O. F. Wadsworth, M.D. He reports at some length fifteen cases in which he performed the operation, and considers it offers sufficient advantages to make it not only justifiable but advisable in many instances, although at present he is disposed to limit its employment within somewhat narrower limits than those proposed by Schweigger.

natives of the Canary islands, and of Russian Astrakhan, are delivered sitting upon a low stool, or upon the floor.

Squatting is a position common to the Irish, Green Bay Indians, Pawnee, Menomonee, Nez-Percés, Gros-Ventres, Tonkawa Indians, as well as to the natives of West Micronesia. The squatting posture seems, indeed, to be very widely diffused, as we find it practised in Arabia, Africa, Polynesia, Australia, and Persia. The kneeling posture was taught in Ancient Rome, among the Arabs, in Germany during the Middle Ages. In the latter case it was regarded as the scientific position, and Homer, in his hymn to Apollo, represents Latona as being delivered while kneeling upon a soft meadow, her hands clasping a tree. The same posture may be traced among widely scattered savage tribes.

We have cited sufficient from this very interesting book to show that whatever posture the untaught savage woman may assume in her parturition she has a good reason for it; and when any uniform position becomes the practice of her tribe it is the one best adapted to her special needs. The safety and rapidity of labour among these peoples are the best proofs that positions and manipulations, which may not be very wrong to call instinctive, are as safe for them in their more natural life as are the more scientific care, position, and instruments, which lend their aid to the parturition of the civilized woman in her artificial environment. A lesson surely may be learned from the use of external expression and massage among the uncivilized, and to which science has but lately given its approval. This is one, among many other things, that science has laboured to build up by patient induction, while the thing sought for lay at its very hand unrecognized, because lost among a mass of common things. That these postures of the parturient are the result of law, and not of chance or custom, seems probable when we observe that, in many cases, they survive tribal or racial differences and the changes that occur in the moral and material evolution of a people.

Dr. Engelmann has not let the opportunity pass to draw some practical lessons from his ethnological study. We will overlook a little dogmatism, and give the reader the benefit of the author's conclusions. He says: "Of these positions the semi-recumbent is the most serviceable, and should be adopted as the obstetric position in all ordinary cases of labour." His reasons for reaching this conclusion are as follows:—

"1. As more convenient and comfortable, not exposing the person, and not being objectionable to the modesty of the patient. 2. As affording more rest and not being tiresome, which is a serious objection to the kneeling and squatting position as applicable to the tender female of our civilization. 3. The semi-recumbent position in bed, the body at an angle of forty-five degrees, the hips resting on a hard mattress, thighs well flexed, is the easiest, most comfortable, and appears to afford the greatest relief and the greatest freedom from pain, coupled with the greatest effects of the uterine contractions, relaxation of all the parts, and a free play of the abdominal muscles. 4. The pelvis is more readily fixed in this position. 5. The perineum has a certain support which does away with the questionable proceeding of supporting the perineum during expulsion of the head and shoulders, by which more harm than good is usually done."

We must confess that there is some sound obstetrical reasoning here, and let us hope that in due time it will bear fruit; although we feel it our solemn duty, in justice to ourselves, and with due allegiance to all old things, to say that, when the expected fruit arrives, we shall sadly miss the sight of the patient physician sitting expectant guard over the threatened perineum; and forever be it said to his honour that neither sloth,

nor hunger, nor fear, nor new fashions, nor theories, no, not even shame, has ever for a moment tempted him from his perincal watch and ward.

Dr. Engelmann extends his study of the subject to childbed and lactation. The same rules or customs regarding the time of applying the child to the breast exist among both civilized and savage. The period of suckling varies greatly. As a rule, nearly all the savage tribes nurse their children much longer than the civilized races. The period varies from two to five years; many of the peoples referred to not weaning one child until they are obliged to make room at the breast for another.

On the whole, the author has succeeded in bringing together a great mass of material, from widely different sources, upon this interesting subject, and has shown qualities as a book-maker of a high order by doing this within reasonable space. There are some faults of arrangement which are due to the fact that the book grew upon him by degrees, but which a new edition, when called for, will furnish a proper stimulus for correction.

The illustrations are good and spirited, and tell the story of the various postural changes very well.

E. V. DE W.

ART. XXI.—*Mother and Child among the Human Races.* By Dr. A. CORRÉ. 12mo. pp. 274. Paris: Octave Doin, 1882.

THIS extremely interesting little volume, one of the series of the *Bibliothèque Biologique Internationale*, is the result of Dr. Corré's observations, during long years of active service, as surgeon in the French navy, and appears to be a summary of a course of lectures on obstetrics and diseases of women and new-born children, delivered by the author at Brest, to a class of young physicians, receiving final instructions before entering the navy for service in various climes; hence the peculiar and instructive, but as yet very unusual, ethnographico-medical character of the work.

The arrangement is that of a text-book on obstetrics, whilst under each heading the relative conditions, as they exist in different climates and among different races, are discussed; we might very properly term it a *Comparative Obstetrics*.

Chapter I. treats of the anatomy and physiology of the female sexual organs amongst the different races; as we find among the many original and very excellent observations of the author quite a number which vary most decidedly with our own observations, so we would question the truth of his assertion that "most of the natives of America have very narrow sexual organs."

All these organs vary in size and shape among different races, often their characteristics are carefully nursed, even increased, and are occasionally an object of national pride. Thus the queen of Madagascar is said to have been intensely proud of her excessively long nymphæ, which were constantly stretched by favourite slaves until they reached an immense length.

In other races they increase in size sufficiently to cause their excision, and this custom once established no variation is permitted; so, when Christianity was introduced in Abyssinia in the sixteenth century, one of its first effects was the interdiction of this operation, which was always

practised before marriage, and resembled the law of circumcision among the Jews. Those Christianized girls could no longer find husbands as a consequence, and the Pope was obliged to interfere and again permit the ancient custom.

We are forced to differ with the views of the author in regard to the shape of the pelvis, its effect upon parturition, and the relative mechanism of parturition among different races. He says, "difficult parturition is a phenomenon acquired by civilization; still, whatever the differences of the pelves may be, there are none which may be said to constitute really an ethnological peculiarity. Even if by certain signs, the Aryan group can be distinguished from other groups, there are no important differences which would enable us to make divisions; the only actual difference that exists is the relative narrowing of the oblique and transverse diameters. There seem to be certain characteristics among the pelves of different races, which, in a general way, distinguish them, one from the other; but certain of these characteristics have been unduly overestimated."

The author says in all the races labour goes on by one and the same method; no difference whatsoever exists in any of its periods or in regard to its mechanism; you may think that you find one, but further observation does away with it. Notwithstanding all that may be said, neither the negress nor any other woman is delivered more easily or quickly than the European. But some cases of dystochia appear among all races.

The author considers social habits rather than climatic or ethnological influences as determining the appearance of the first menstrual flow.

Fecundity is greater in cold countries, where sexual ardor is less and the constitution more vigorous. The abuse of sexual intercourse, common in the tropics and in large cities, diminishes fecundity in woman.

Chapter II. is devoted to pregnancy—its duration, signs, customs, and diseases. Most peoples seem to accord a certain independence to the fœtus while still in the womb of the mother, and believe that, according to its own will, it takes its position in the womb and leaves it when it chooses. The time is even not far distant when, in France, the motions of the fœtus were spoken of, and when the cause of labour-pains and expulsion of the fœtus was looked for in the desire of the fœtus to change its condition of life.

The Chinese believe that pregnancy can last two or three years because the child does not wish to leave the womb: and even in a legal Mussulman treatise it is stated that the maximum term of gestation may attain four or five years.

The author makes the *naïve* but probably true statement, that pregnancy seems common in seasons analogous in different countries, usually in a month of moderate temperature; as a rule, in the spring time, when the budding vegetation solicits the union of the sexes.

Chapter III. relates to parturition, assistance, position of the patient, labour, treatment of difficult cases, dystocia, mortality, disease, and consequences; he makes a very correct statement when he says that the exclusion of men from the lying-in room is not a proof of modesty. Our feeling of shame and modesty is a refinement entirely unknown to many people, and shown by others in the most peculiar ways. Among many, a woman in labour can only be attended by one of her own sex, but this is because among savages woman is a more inferior being, despised and dare not aspire to the assistance of men. She is worth so little, and so easily replaced; she is good for the bearing of children, to look after them, and to

give satisfaction to her master, but especially to do the rough work in the fields. As soon as she is a nuisance she is left; she is sold, she is killed, and sometimes she is eaten for fear of letting a good piece of meat escape.

The management of labour among the American Indians is taken from Engelmann (*Labour among Primitive Peoples*, St. Louis, 1882).

Of the Hindoos he says, what is true of many primitive people, if labour does not go on properly, these midwives worry their patients in a most terrible manner. They make them take the most peculiar positions, execute the most extraordinary movements, and, finally, when these gymnastics have no good effect, they resort to their grand remedy, which is to make them jump several times over a piece of wood, most frequently over the large pestle of their rice mortar suspended about a foot from the ground. They also use certain medicines to stimulate the uterine contractions, especially black pepper, which they use as abortives. Labour over, the woman is placed in a small, ill-ventilated room, without any other opening than the door, which is usually closed, and, smoked by a wooden fire, constantly kept up, she is condemned to isolation in this terrible atmosphere.

The management of the new-born, nursing, and weaning take up the fourth chapter, and here we find another of the author's terse cutting statements, unfortunately so true, when he compares the customs of the savage with those of civilization. He says: "Among all people, except the most civilized, the mother's milk is considered the proper nourishment for the child." Some put the child to the breast at once, others wait three days; all nurse until a succeeding pregnancy demands the cessation, or until the child, disgusted with the manner of nourishment, weans itself, from two to three and five years.

Chapter V. treats of the physical characteristics of the new-born, development, deformities, and mutilations customary among different races; finally, diseases of children.

One of the statements to which we take decided exception, having witnessed the entry of the little negro into this world, is found on page 165, where the author says that a characteristic, little known, of the negro babe is the absence of the cry at the moment of birth. Dr. C. H. Assaniol has assured him, after long experience, of the truth of this fact, and explains it by the sole difference between the maternal temperature and the external temperature: the new-born does not receive that painful impression at its escape from the utero-vaginal canal, which it does in the temperate or colder climates, the child does not experience that shock which contact with a colder air must produce. But why does this cry occur among the new-born of other tropical races?

In speaking of circumcision, as practised on male children, usually in earlier years, he mentions the peculiar statement made by an old inhabitant of Rio-Nunez, where it is performed at twenty-five and thirty. The curious explanation of the custom is this: that the glans, always uncovered and exposed to continual irritation, loses its sensibility, which necessitates a lengthening of the act of copulation and of the enjoyment of the pleasure (page 176). This is a peculiar view, in opposition to the belief of those who advise the operation for the sake of morality—in opposition to St. Jerome, who teaches that the removal of the prepuce, in diminishing the voluptuous sensation, preserves man from too great an abandonment to sexual pleasures—in opposition to Moses, who by this operation endeavours to prevent the results of too ardent an imagination.



Speaking of diseases, variola is mentioned as particularly dangerous to children, carrying off great numbers, especially among the North American Indians, Arabs, Persians, Chinese, and Japanese. Many fight against it by inoculation with matter from already affected subjects. This we have often seen upon the eastern coast of Africa. In Arabia the virus, which is an object of public sale, is inoculated by an ordinary needle; and in all nations it seems to have been observed that inoculated variola is always less severe than the spontaneous variety. The Arabs see an especial advantage in the fact that it is accompanied by a much smaller number of pustules. In India the English have again brought among the natives the ancient practice of inoculation known to the ancient inhabitants, and described in a Sanscrit book. The Chinese have accepted vaccination; the Japanese received it from Holland. In Boke the French surgeons have not been able to establish vaccination, having attempted it with tubes imported from France, as the natives compared these negative results with the beautiful pustules which resulted from their own inoculation of variola matter, not considering that the effect was as good with much slighter annoyance. The Arabs did not take kindly to vaccination, believing that it was merely a means of marking their children with the marks of their conquerors. They declared that they would rather cast their babes into the sea than allow the sign to be impressed on them, so that they might be known at any time to be taken away from their family for baptism. An ethnological influence upon the appearance of the pustule and its shape, form, and size, seems hardly possible, excepting the difference in thickness of the skins of various races, the pustule develops in the same manner when under the same climatic influences; still some believe that it is smaller among the blacks than in the whites. Climatic influences are greater, and the pustules are smaller in hot climates than in temperate or cold.

Deformities are certainly as common among savage as civilized races, notwithstanding Alexander von Humboldt's statement to the contrary; yet among savages a certain superstition, which is common to all, causes them to be concealed and ignored, if not destroyed. They are cast off, die from starvation, and if they live are never seen, hence the belief of travellers that deformed children are never found among people living in a state of nature.

The various diseases of the new-born are treated of at length; a lengthy discussion is devoted to the cause of the frequency of umbilical hernia among the negroes, rarely existing at birth, but appearing soon after; it seems to be the continuation of an embryonic state. He thinks that careful examination would show an absence of the necessary muscular fibre in the surrounding tissue—in the umbilical ring.

Tetanus and nervous affections seem very common; in India, upon the Antilles, in Guiana, and Senegal tetanus carries off two-thirds of all new-born children.

Nervous affections are so common, and pervade all diseases, that convulsions announce the appearance of many affections entirely foreign to the nervous system, when a slight chill would hardly appear in the adult, and again they reappear in the course of the disease. This susceptibility of the nervous system is found among all races, even among those whose nervous activity attains a minimum in the adult.

Scarlatina, though common to all races, is not so frequent in the tropics,

and yet the author briefly states that it may have escaped observation on account of the difficulty of recognizing the eruption on coloured skin.

Chapter VI., closing this interesting series, is devoted to abortion and infanticide; again advanced civilization suffers in comparison with the instinctive customs of the savage. The author says: Among primitive peoples, where promiscuity of the sexes exists, where the girl shares her favours indifferently with all, where the wife sees in her husband only a brutal man ready to abandon her as soon as he has satisfied his gross appetite, where after satisfying him she cannot count upon his protection, the child is a charge upon the mother far beyond her ability, hence the mother relieves herself of the child. Civilized laws look upon abortion as a crime which is to be punished most severely, but unfortunately its prevention is not considered. A girl who relieves herself after having been abandoned by her seducer, because she sees nothing but misery and opprobrium for herself and her child; the wife who seeks to hide from the world and a loving husband the results of former ties, perhaps answerable by religious or legal prejudices, has not the right to arrest the development she has once conceived, yet she is to be pitied; less worthy of pity are those women who practise abortion for the mere purpose of retaining the freshness of their charms, or, to escape the obligations imposed by maternity, to continue in a revel of pleasures; but it seems that by the vice of public education the woman of refined civilization is nursing a feeling, or an instinct, which debases her and brutalizes her; an instinct which makes it appear to her as proper to cast off the product of conception as to cut her hair. Nations become debilitated and demoralized, and amid the surroundings of brilliant luxury a retrograde march begins towards the most primitive vices of humanity.

Each community has its own well-known remedies, medicines or charms. In Karikal the most common remedy is the black aunin, vulgarly called black anise or four spices. The natives of India use it according to the dose; fifteen grammes is an emmenagogue, and larger doses act as abortives. They often take too large doses of this abortive paste in order to be sure to attain the end, but they merely produce vomiting and the small dose remaining barely suffices to produce a few uterine contractions, which are, however, stimulated by the manipulations of the stomach and uterus. The natives of India have some peculiar practices in order to limit the number of their children without having recourse to abortion by which they expect to prevent any possibility of conception, by wearing certain rings and by drinking rams' urine, or rabbits' blood, etc. In Constantinople abortion is publicly practised in shops held by Jews. The law is indulgent to the crime, as it can be paid for cheaply. Generally, the cost of removing a non-viable fœtus, or even an embryo, is a sum equivalent to a tenth of the price paid for the murder of a mother. Arab women seek to produce sterility and escape the fatigues of numerous pregnancies, and imagine to arrive at that end by drinking a maceration of sal soda, peach leaves, and the sap of the male fig tree.

We know what abortion is among Christian peoples, the motives and science brought into play for its execution. The more civilized the people the greater the crime. The same causes which favour abortion determine infanticide. Among primitive peoples there is no difference between the two. Girls are sacrificed more readily than boys, and among savages infanticide is even more common than abortion, because it is a less dangerous means of prevention. It is not only of general utility, but

even serves an immediate purpose, as Sturt tells us that he has seen the slain infant serve as food for his Australian parents. Sometimes infanticide is ordained by custom or even exacted by law. Upon the eastern coast of Africa twins are killed and the mother is cast off from the tribe, under the idea that the same man could not at one and the same time produce two children, and that the mother must have been culpable of criminal intercourse. The Noxas of America who kill their wives if they abort, never do away with twins. Among savage people infanticide is sometimes due to noble sentiments; as the Cymerian women strangle their infants with their long tresses rather than abandon them to the brutal king. The negro slaves in the Antilles kill their children when they are threatened with separation.

Among civilized races infanticide is less frequent than abortion, because it is more difficult to hide. It is an extreme measure which is dreaded. But we would speak of a class of women, common in civilization, who escape the severity of the law, yet merit its punishment. They are those young women, full of health, in the possession of all that is desirable, who despise the feelings of maternity, refuse the new-born their love and maternal protection, and, without daring to avow it, are anxious to get rid of the nuisance; they take the children away, place them in the hands of some mercenary nurse where they expect them to die. With all this before us the author again truly exclaims: "Can we point with scorn to those simple savages and listen with satisfaction to the recital of their deeds of cruelty towards their children?" The author then mentions a most peculiar story which is told by some writers with regard to infanticide in China. Thus, Barron, who visited China before the year 1800, says that government wagons patrolled the streets in the morning to pick up the bodies of dead infants thrown out in the night, and says that the dogs and swine were turned loose into the streets in the early morning to eat up the carcasses as they were thrown out. No other traveller has ever seen such peculiar scenes. After we have seen the affection of the Chinese parents and their care for their children, it seems revolting injustice to repeat such stories; of course there are child murderers in China as there are in our own civilized countries. Certain it is that the government of China has never authorized or furthered such crime.

We have endeavoured to follow the author's course, and to point out some of the more remarkable and striking features of this interesting and valuable medico-ethnological work, most especially the telling comparison which he makes between many of the customs of civilized and savage races—yet these are only crumbs from the fund of profitable and enjoyable knowledge contained in *La Mère et l'Enfant*.

G. J. E.

ART. XXII.—*Recent Works in Surgery.*

1. *A System of Surgery, Pathological, Diagnostic, Therapeutic, and Operative.* By SAMUEL D. GROSS, M.D., LL.D., D.C.L. Oxon., LL.D. Cantab. Illustrated by upwards of sixteen hundred engravings. Sixth edition, thoroughly revised and greatly improved. In two volumes. Imp. 8vo. pp. 1194, 1174. Philadelphia: Henry C. Lea's Son & Co., 1882.
2. *The Principles and Practice of Surgery.* By JOHN ASHURST, JR., M.D., Professor of Clinical Surgery in the University of Pennsylvania, etc. Third edition, enlarged and thoroughly revised, with five hundred and fifty-five illustrations. 8vo. pp. 1064. Philadelphia: Henry C. Lea's Son & Co., 1882.

THE ten years that have elapsed since the appearance of the fifth edition of Professor Gross's work have indeed been years in which "astonishing progress has been made in every branch of surgery;" rendering it necessary that in the preparation of a new edition, "every chapter" should be "thoroughly revised, many portions entirely rewritten, and a large amount of new matter introduced, in order to place the work fully abreast of the existing state of our knowledge." That this has been done no one can question who will carefully examine the volumes, though it will be found that there have been retained and reiterated certain well-known beliefs and opinions of the distinguished author which are not altogether accepted by the surgical world at large. Regretting that neither time nor space permits of even brief reference to the multitude of changes, additions, and references to work lately done by surgeons at home and abroad, we must content ourselves with merely glancing at a few points.

Inflammation is still a necessary consequent of "all accidents of whatever nature or degree" not "immediately fatal;" general bleeding still stands "at the very head of the list of the constitutional remedies" for it, "as it is at once the most speedy and the most efficient means of relief;" mercury still has a "virtue in controlling" it "hardly inferior to that of the lancet and of tartar emetic."

"Listerism" is regarded with no more favour than a decade ago; the antiseptic treatment being in cases of serofulous abscess "utterly useless;" in wounds, "never found" by the author of "any appreciable benefit;" in compound fractures, "whether really of any benefit is still a mooted question;" in compound dislocations, "although there is every reason to believe that its efficacy has been much exaggerated, it nevertheless possesses a certain value as a 'protective,' and is therefore deserving of a fair trial." The special paragraphs on antiseptics remain essentially as in the previous edition, it being as before declared that "the demonstration of living disease-producing germs is wanting."

Though unshaken confidence is still expressed in the safety of chloroform, and the same regret felt as before at the little employment in this country of "an agent capable of conferring such vast benefit, . . . because a fatal instance, produced for the most part by maladministration, is occasionally reported," yet ether is now declared to be "unquestionably the safest" anæsthetic, to which "for some time past I have, in great measure, restricted myself both in public and private practice . . . except in the case of children." Dr. Long's claim to be regarded as the discoverer of ether-anæsthesia is dismissed with the statement that, "although

he may have been, and probably was, the first to use this fluid as a means of preventing pain, he failed to interest the profession in it, and has thus lost all just claim to the honour of one of the greatest discoveries ever achieved by human genius."

The Bonwill "rapid breathing" method is deemed "worthy of more attention than has hitherto been accorded to it."

Septicæmia is now separately and specially considered, and notice taken of the endeavours that have been made by English and Continental investigators to determine the nature of the exciting cause of the morbid process; the author declaring his belief that "the infectious material is sepsin, or the chemical product of the decomposition of the tissues, and that the schizomycetes which have been shown to be present in the blood and organs of septicæmic and pyæmic animals and men, as well as the corpuscles of putrefying blood and pus, act merely as carriers and disseminators of the poison." Multiple chills are stated to be met with "in four-fifths of all cases, so that this feature is of no diagnostic value," as distinguishing septicæmia from pyæmia.

In the chapter on Tumours considerable change has been made in the arrangement, and a new subsection added on lymphangiomata.

The essential difference between *chancroid* and *syphilis* is now for the first time acknowledged, and the former separately considered; the author declaring that the question of the unity or diversity of these affections "had disturbed my own mind during nearly the whole of my professional life; and it has only been within the last few years that, in consequence of the accumulating light of modern observation by men of the greatest opportunity, and the most reliable skill and judgment, in different parts of the world, my doubts have been finally removed." As was of course rendered necessary by such radical change of opinion, the whole chapter has been recast. That the long held views still exert an influence, may be inferred from the statement, that "when a man applies for advice with a suspicious looking sore or abrasion within a few hours after impure connection, the surgeon should not hesitate to employ means for the destruction of its specific properties."

In the subsection on compression of the brain there appears an extended notice of cranio-cerebral topography, contributed by Dr. E. C. Seguin, of New York; Professor Gross summing up by declaring that our knowledge of such topography "is not perfect, and in a practical point of view is very unsatisfactory. As yet, we have broken only a little ground; the great work remains to be accomplished. In a field so vast as this, our progress must necessarily be tardy, and many hands will be required to solve its mysteries."

Due notice is taken in their appropriate places of the recent surgical triumphs (or "operative audacities") in the removal of the diseased larynx, œsophagus, pylorus, intestine, spleen, and kidney. Laryngectomy for cancer is found to be "not conducive to prolongation of life. Hence if it be justifiable at all, it should only be practised when the disease is limited to the larynx of comparatively young persons. In sarcoma, on the other hand, the procedure is worthy of more extended trial." Gastrostomy for œsophageal carcinoma, if early performed, is regarded more favourably than before, "as an expedient for alleviating the suffering due to the pangs of hunger and thirst." Splenectomy is pronounced a "perfectly justifiable procedure when the organ is a source of great discomfort and pain, in all diseased conditions except hypertrophy connected with leucocythæmia, in which it is positively contraindicated."

The Warren-Heaton treatment of hernia is pronounced still "on trial," and it is questioned whether equally good results would not follow the use of a proper truss. Dowell's operation "has been weighed in the balance and, like all similar expedients, found wanting."

The carbolic acid treatment of hæmorrhoids is regarded as "uncertain in all cases, and in many fraught with danger."

Bigelow's rapid lithotripsy receives "unqualified approval," and is declared to be, in skilled hands, "decidedly more safe and satisfactory than lithotomy."

The frequent occurrence, at the present day, of laceration of the cervix uteri is attributed to the fact that the woman in labour is not bled and then given a full anodyne. Such an accident "would be incomparably less common if women were more frequently bled, and the forceps less frequently applied. Ignorance and haste too frequently do this direful work."

Batley's operation is very favourably regarded, and notice is taken of the removal of the ovaries and tubes for the relief of menorrhagia (Tait's operation).

MacEwen's and Ogston's operations for knock-knee are duly considered; the former being preferred, as much the safer.

The treatment of amputation-stumps by the "open method" is highly regarded; "it may safely be predicted that the day is not distant when it will be generally adopted."

The statistics of the various major operations, ligations, excisions, and amputations, have been brought up to date, careful analyses made of them, and practical conclusions deduced therefrom; much and deserved credit being frequently given to Professor S. W. Gross for assistance rendered, as also for investigations elsewhere reported. The latter writer's well-known contributions to the literature of the profession upon the subjects of mammary tumours and osteo-sarcoma are largely incorporated into the present work.

In the preparation of the chapters on the eye, the ear, and the respiratory organs, the author has availed himself of the assistance of Drs. Thomson, Harlan, Burnett, and Cohen.

In concluding this brief notice of a new edition of a work which has for nearly a quarter of a century commanded the respect and secured the admiration of the surgical world, it may be permitted us to express the hope that its venerated author may for many years be spared to enjoy the fruits of his long and most active professional and professorial life. How seldom it happens, he once said to us, that a man's writings outlive him. His own will preserve the remembrance of him as long as there is anything known of the surgery of the nineteenth century. "A great surgeon, accomplished in the science and skilled in the art of healing, capable of interpreting the secrets of pathological processes, of diagnosing disease, and of performing with ability and readiness all the great operations."

2. The comparatively short time (four years) that has elapsed since the appearance of the second edition of *Ashhurst's Surgery*, while it serves to indicate the well-merited favour with which the work has been received, yet prevents any extended notice of it at present, since it remains essentially as before in arrangement and in the views expressed upon unsettled questions of pathology and operative procedure.

The chief changes noted have been in the way of enlargement of statistical tables, references to new operations, particularly in the department

of abdominal surgery, and recognition of the value of the recent contributions to professional literature.

In the chapter on anæsthetics notice is taken of "primary anæsthesia" and of the "rapid breathing" method of producing analgesia.

As in the earlier editions, septicæmia and pyæmia are considered together as "parts of one disease," denominated pyæmia. Under such circumstances the author should have modified his statement that "the first symptom of pyæmia, at least in surgical cases, is almost always a sensation of cold, with usually a decided rigor or chill. These chills are subsequently repeated at irregular intervals," etc.

Referring to "cerebral localizations" and Broca's and Championniere's rules for selecting a point of trephining, pardon is hoped for "for expressing the opinion that their interesting investigations are more ingenious than practically useful."

In treating of fractures of the lower end of the radius, though mention is made of a number of surgeons who have specially studied such accidents, Lecomte's name does not appear, though his article published in the *Archives Générales* for December, 1860, and January, 1861, was one of very positive value.

The use of hot water as a hæmostatic is very briefly referred to ("the checking of oozing of blood may be facilitated, after tying the vessels, by exposing the wound for a short time to the air, or by pouring over it a stream of cold or of quite hot water . . . successfully employed in capillary hemorrhage by Keetley, C. T. Hunter, and other surgeons"). So valuable an agent not only in cases of capillary, but other hemorrhages, certainly deserves more extended notice.

In their appropriate places are given very complete and useful tables of the operations that have been made in cases of malignant disease of the larynx and the several parts of the alimentary tract, as also those upon the kidney and spleen. Resections of the pyloric and cardiac extremities of the stomach are regarded as "hardly within the pale of legitimate surgery."

Though, as we have already stated, this latest edition is in no respect very markedly different from its predecessor, it is really a revision and improvement, and cannot but in larger measure secure the professional approbation that has been given the work from the time of its first appearance.

P. S. C.

ART. XXIII.—*Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Vol. III. Quarto, pp. 11, 1020. Government Printing Office, Washington, 1882.*

It is a very pleasant task to notice the successful progress of this great work. It is a proper subject of pride to the medical profession that such a record can be made exhibiting the greatness of our work, and a matter for national congratulation that the conception and carrying out of so grand a plan should belong to America. The scope of the work is enormous, and the execution of it, so far as it has gone, is every thing which can be desired.

Dr. Billings says "this volume includes 9043 author-titles, representing 10,076 volumes and 7386 pamphlets. It also includes 8572 subject-titles

of separate books and pamphlets, and 28,846 titles of articles in periodicals. There are also catalogued 4335 medical portraits, under the heading 'Collection of Portraits.' Such a book of course defies analysis, but a single instance may be selected as helping to give some slight idea of the thoroughness and extent of the labour involved in its preparation. Thus, the third title in this volume is "Cholera," being found upon page 2, and as we turn over the leaves we find the same heading, with various subdivisions, until we reach page 152. Certainly the man who desires to make an exhaustive study of Cholera will have no cause to complain that he has but a limited bibliography to consult.

There is another feature which seems to us worthy of special notice, namely, the affixing to many of the names of authors the date of their birth and death. In fact the person who sits down to pore over the pages of this book will find himself in the plight of one in a library, who takes down one book while looking for another, and is in danger of being altogether diverted from the original object of his search.

But nothing we can say will add to the value of the book. It needs no commendation. It is its own only fitting commentary. While laying no claim to originality it is in point of fact most original, and so far as we know stands alone.

Its accomplished author is one who has conferred many favours upon the profession, he is one of whom the profession in this country is justly proud, and we tender to him our sincere and most cordial congratulations upon the progress of his life work.

There is however one important matter that should not be lost sight of. Many books are delayed by reason of the difficulties their authors find in getting ready for the press. In this case the work is in large part done and ready for publication. All that is needed is the appropriation by Congress of the necessary funds. It is strange that in the richest country on the globe, which despite the very rapid extinguishment of the national debt has an enormous surplus revenue, there should be any difficulty in obtaining the funds needed to speedily publish a work of so great importance. That such a state of things should exist is the fault of the medical profession. For there can be no manner of doubt that were the influence of physicians unanimously, or even largely, exerted, the representatives of the people would quickly respond thereto. This volume loudly appeals to medical men to so exert their influence that its successors may soon see the light, and be issued in such large editions that they may stand together upon the shelves of every cultivated physician who desires to turn to them.

There has been some disposition to carp at the work of cataloguing the grand library of the Surgeon General's office. It has been disparagingly spoken of, and in such a way as to allow the inference to be drawn that to publish a huge catalogue is a poor way of spending money. Such a spirit is reprehensible in the highest degree, and altogether unworthy of scientific men who know, or should know, that the treasures of a large library are buried beyond recovery unless there is a proper index to their contents in the shape of a catalogue. No librarian of any standing nor any man of at all extended acquaintance with books, will fail to see the immense advantage to literature which must accrue from the speedy completion of this Index-Catalogue. Large it certainly will be, but without it the accumulation of books in the grand Medical Library at Washington will be well-nigh useless.

S. A.



ART. XXIV.—*State Medical Society Proceedings.*

1. *Transactions of the Medical Association of the State of Missouri, at its 24th Annual Session, held at Mexico, Mo., May 18 and 19, 1881.* 8vo. pp. 194. St. Louis, 1881.
2. *Transactions of the New Hampshire Medical Society at its 91st Annual Session, held at Concord, N. H., June, 1881.* 8vo. pp. 168. Concord, 1881.
3. *Transactions of the Medical Society of the State of Pennsylvania, at its 32d Annual Session, held at Lancaster, May, 1881.* Vol. xiii., Part ii. Published by the Society. 8vo. pp. 501–901. Phila., 1881.
4. *Transactions of the State Medical Society of Wisconsin, for the year 1881.* 8vo. pp. 173. Milwaukee, 1881.

1. THE President's Annual Address by J. M. Allen, M.D., of Missouri, discusses the *Need for Thorough Medical Training and Teaching, and the Importance of Local Medical Organizations*, topics to which the attention of the medical profession cannot be too often or too earnestly directed. The fact, which is only too obvious in most localities, that the medical profession signally fails to exert the influence in the community commensurate with its position, is attributable either to a want of sufficient general intelligence in the profession to command the respect and confidence of its citizens, or to neglect of organization by which its influence could alone be made manifest.

Dr. Frank J. Lutz reports a very interesting and successful *Case of Gastrostomy*, or the establishment of a gastric fistula in a case of malignant stricture of the œsophagus, in a patient, æt. 53, who survived the operation nearly eight months.

The value of the *Cooling Bath* in the treatment of pyrexia is the subject of a vigorous article by Willis P. King, M.D., of Sedalia, in which the dangers of high temperature are dwelt upon, and the antidotal effect of the water at a temperature of 90° to 80° for children, and as low as 60° for adults fully considered. He uses a Knowlton's portable bath-tub, which is made of rubber and can be taken anywhere. Other treatment is not ignored, but experience teaches that remedies have more effect where the effects of excess of heat are removed.

The *Connection between Asthma and Nasal Polypi* is the subject of a paper by Dr. C. A. Todd, of St. Louis, and a case is reported in which long-standing asthma was permanently relieved by treatment directed to the upper air-passages.

An interesting essay on *Illusion, Hallucination, and Delusion*, a differential study for diagnostic purposes, was read by Dr. C. H. Hughes, of St. Louis. Although the first refers to a false impression, due to erroneous perception from a real object, the second to a deranged impression without objective reality, in both of these conditions the reason is able to detect the existence of an error, and the mind for a time retains its balance. The distinction between these and delusions is so clearly stated, and seems so just, that it is given in the words of the author:—

“*Delusions, as compared with illusions and hallucinations, are erroneous or false judgments formed by the mind; as distinguished from the foregoing erroneous or false perceptions, the mind does not recognize its unreal perceptions, but believes in and acts upon them as verities, and they so dominate the thoughts,*

feelings, and actions of their unfortunate possessor, as to change his individuality as compared with his former and natural self, and thus to make him insane. The morbid condition here is not alone along the tracts of sense perception, but in the centre of the brain cortex, where impressions are evolved into thought, and unreal perceptions become, to the mind diseased, real existences. To the mind which still retains its sanity, the image of an illusion or hallucination is as perfect as when it has, in the more profoundly morbid state, merged into the delusion of the maniac, but the intellect, being yet untouched by disease of its special seat in the brain, recognizes the apparent reality to be but a shadow instead of the substance."

Dr. W. H. Lee reports two cases of *Spontaneous Version* and involution in a shoulder and arm presentation, both infants were stillborn.

Dr. B. F. Wilson, in a paper on *Diphtheria*, recommends absolute quietude of patient, ventilation and cleanliness. Alcohol is placed at the head of remedial agents, but balsam of copaiba freely given so as to saturate the system is claimed to have specially beneficial action.

In a *Case of Placenta Prævia*, reported by E. G. Warth, M.D., after evacuating the amniotic fluid through the placenta, a living child was delivered, although daily hemorrhages had begun to occur nearly six weeks before.

A *Report of a Committee on Medical Education*, which reviews the advantages (?) offered by some of the eight colleges of Missouri (three in St. Louis, and one in Kansas City, three in St. Joseph, and one at Columbia), discusses the effects of cheap medical schools upon the profession, and recommends the encouragement of those institutions alone which really endeavour to advance medical education. This report gave rise to extended discussion especially with regard to the advisability of establishing State examining boards, to which strong objections were urged. The conclusion of the whole matter was a determination to educate the people so that they would demand educated physicians.

2. In addition to the details of the usual routine proceedings of the meeting the *New Hampshire Transactions* contains the President's Address by Dr. G. P. Conn, M.D., a Report on Surgery, by A. H. Crosby, M.D., and five essays on subjects relating principally to practical subjects. The *President's Address* was devoted to the consideration of State medicine, and an appeal to the profession for a united effort in order to secure the enactment of laws for the advancement of preventive medicine. Since the delivery of this address the Legislature of New Hampshire passed an "Act to establish a State Board of Health," of which Dr. Conn was appointed President, and Dr. J. A. Watson, also of Concord, Secretary, and Dr. Carl H. Horsesh, Dover, Chairman of a Committee on Hygiene.

The *Report on Surgery*, by Dr. A. H. Crosby, discusses several points of interest in the treatment of fractures, especially fixed dressings, and reports instances from practice illustrating their use. Among these is a case of successful amputation at the shoulder-joint, for a railroad crush in a brakeman 29 years of age, with sloughing of the flaps and granulation. Among other cases quoted is an interesting one of strangulated hernia, in which taxis failed, but reduction followed the administration of strong coffee. He concludes with a word of warning against sudden syncope during the administration of ether, a danger which was pointed out by Dr. Jackson, but which is now generally ignored. He recommends that the anæsthetic should not be administered unless the means of counteracting syncope are at hand: Ammonia, cold water, and if possible, the electric

battery. Dr. F. A. Stillings contributes to the report several cases of malignant disease, in which the use of the dermal curette, and the internal administration of Fowler's solution, was followed by a perfect cure. Dr. John R. Ham also adds a contribution to the Study of Fractures and Dislocations, based upon 118 cases of fracture, and 29 of dislocation from his own experience.

An essay on *Puerperal Convulsions*, by J. W. Parsons, reviews the etiology of the disorder, the author's opinion being expressed that "primarily we have in the puerperal state a peculiarly susceptible condition of the nervous system, one in which impressions are received and disturbances created more easily than in the non-puerperal state. And yet why this susceptibility should show itself in one female and not in another, or in one pregnancy and not in another of the same woman, it is utterly impossible to determine." Out of five cases treated by him, he had not lost a single mother, and succeeded in saving but one child. He had not seen puerperal fever following eclampsia. Protesting against routine treatment he declared that the time of the occurrence of the attack must be taken into consideration, and the exciting causes removed if possible. Under ordinary circumstances, bleeding he regards as the safest and promptest agent in overcoming the convulsions; anæsthetics may be employed as adjuncts, as a rule; in exceptional cases, they may form the chief reliance. Morphia hypodermically is often of great service. The use of the forceps is advised where speedy delivery is necessary.

The *Report on Necrology* contains obituary notices of Prof. Edward Elisha Phelps, and Dr. George W. Garland.

3. In the able *Presidential Address* of Dr. Carpenter, of the *Pennsylvania Society*, among the physician's problems are especially considered those of Medical Education and the Management of the Insane. He protests against the practice of opening the entrance door to the profession to the unfit and unqualified. Since it is without the province of the medical school to convert the ignorant, careless, ill-mannered, and, we may add, unscrupulous youth, into the learned, refined, and honourable physician, he asks that all such be excluded at the threshold. The remedy he prescribes is that every physician be held responsible for the preliminary education, the honourable character, and general fitness of his office students, and, at least, the enforcement of the rule adopted by the State Society requiring a preliminary examination of every applicant for office privileges; and he urges that the profession "make choice only of fit persons to serve in the sacred ministry of healing." The object sought to be obtained by this is laudable, and the means unexceptionable, were it not that practically the matter is not under the control of the profession. For many years medical schools have given summer courses, or extra lectures, which count as "a year of study," and some openly announce the fact that such an extra course constitutes a college preceptorship. Over such as adopt this plan the profession can exercise little if any direct authority, and if not over these, why, it may be asked, legislate against the honourable few who are still willing to follow the time-honoured method of studying with a physician, at a greater expenditure both of time and money than the preceding? No, the voice of authority that will in the near future regulate medical education in this country will issue from a source that has more power to enforce obedience to its behests, than has the medical profession of Pennsylvania or any other

State. The second point referred to, that of the management of the insane, criticizes very severely some of the defects of the American plan of treating persons deprived of their reason, and contrasts them with the English and European systems. He also notes the defective organization of American insane hospitals, and recommends the appointment of a commission for the investigation of lunatic asylums and the protection of the rights and interests of the insane.<sup>1</sup> The whole address was timely, earnest, and convincing.

In the *Address on Surgery*, Dr. S. M. Ross, of Altoona, among other interesting cases, details one of a double amputation at the knee-joints, made with the instruments contained in a Gross's pocket-case. The patient had sustained a railroad crush of both legs, and although the patellæ were retained, enough healthy skin could not be obtained to cover the ends of the stumps, and he was obliged to use the damaged skin. The bruised skin sloughed off, and healthy granulations were deposited upon the denuded condyles. "The first granulations were upon the crucial ligaments, and in the course of three months the stumps were covered with flesh and skin, and he lives to-day with two good stumps, and each femur entire."

In a paper entitled *Clinical Notes on the Extirpation of the Ovaries for Insanity*, by Wm. Goodell, M.D., the notes of several cases are given, in which insanity seemed to be directly dependent upon ovarian disorder, and relieved by operation. Having in two instances failed in attempts to remove the ovaries by vaginal incision, the author will hereafter only employ laparotomy.

In *Notes on Albuminuria*, Dr. James Tyson calls attention to the necessity of applying both the heat and nitric acid test to urine in which there is only a small proportion of albumen, and insists upon preliminary filtration if the urine is not perfectly clear. The urine should be set aside for several hours after boiling, in order to allow any albuminous sediment to deposit. He also observes that a large amount of albumen, not due to pus, "almost, if not quite, invariably means Bright's disease," whether casts have been discovered or not.

Dr. J. L. Crawford, of Greensburg, considers as *Indications calling for Active Treatment in Typhoid Fever*, high temperature and cardiac failure, the former to be met by bathing and large single doses of quinia (gr. xxx-1), and the latter by stimulants freely given.

Dr. Oscar H. Allis contributes two valuable illustrated papers upon the *Danger from Fractures in close proximity to the Knee-joint, and Deformities from Fracture at the Elbow-joint*; in the latter he examines and condemns the customary treatment with splints, flexion, and passive motion, and recommends placing the arm in an easy, extended position, and maintaining it with an adhesive strip anteriorly and posteriorly, and allowing perfect rest during four weeks, possibly six, after the receipt of the injury. In the mean time any symptoms of local inflammation should be kept down with the douche, and other local treatment. The following judicious recommendations are given with regard to the treatment of the first class of fractures:—

"1. Regard all fractures in the vicinity of the knee-joint as belonging to a class of special danger.

"2. Examine all such fractures under an anæsthetic.

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<sup>1</sup> The Governor of Pennsylvania has since appointed a Commission for the purpose of reporting upon this subject.

"3. Amputate promptly if there is reason to believe the artery or vein is torn.

"4. Make no hasty or favourable prognosis.

"5. If an attempt is made to save the limb, place it in an easy, unconstrained, but secure position.

"6. Visit the patient frequently, and record the change from day to day.

"7. If high constitutional symptoms arise, if gangrene or septicæmia threaten, delay will add nothing to the chances of recovery.

"8. If the limb is removed, make a careful dissection of it in the presence of competent physicians, and record the result."

In a paper on the *Antiseptic Treatment of Cystitis in the Female*, Dr. Knut Hoegh reports a case of cystitis cured by washing out the bladder with carbolic acid or boracic acid solutions, and permanent drainage per catheter, the exposed extremity of which was kept under the surface of carbolized water contained in an ether-can.

Dr. D. W. Moore reports a case of *Rupture of the Uterus during Parturition* followed in about five years by a subsequent pregnancy, and by a second rupture of the vagina and uterus in the first stage of labour; when the patient again made a good recovery.

4. The Thirty-fifth Annual Session of the State Society of Wisconsin was held at Milwaukee. About one-third of the volume of *Transactions* is devoted to a stenographic report of the proceedings, in addition to which are included the President's Address, two reports (one on surgery, the other on new remedies), five original essays, and five biographical sketches of deceased members. *The Address of the President*, Dr. Ira Manley, of Markesan, was devoted to a consideration of the influence of the mind upon the body, more especially in its medical relations. The influence of the imagination upon physiological processes, and upon the course of disease, is real and well deserving of further study:—

"To say that a cure effected by some irregular practice is only imagination, although it may have shown a remarkable influence and a power that ordinary medicines have failed to exert, is not doing justice to our own intelligence. Imagination is a pervading force, and we shall be wise in our ministrations with the sick, not to forget that we have in it a baleful depressing influence, or, if rightly guided, a hopeful, cheering presence, that brings comfort and health."

The fact that this force has been in the history of medicine the basis of a number of irregular sects, has had the tendency to make its use distasteful to rational practitioners, but rightly considered this offers the strongest argument for its proper employment in rational medicine. Every one knows how much recovery is aided by hope and a strong desire to get well, and how unsatisfactory it is to treat an apathetic patient, and yet but few practitioners are found who follow the example of Dr. Rush, who undoubtedly owed much of his success to an appreciation of this important element. He says: "The remedy I propose to use might be of doubtful utility, yet never did I prescribe until I had worked up my patients into a confidence bordering on certainty of its probable good effects, and the success of this measure has much oftener answered than disappointed my expectation." Thus the wise physician retained and benefited patients, who otherwise would have fallen into the hands of charlatans to furnish certificates of marvelous cures "after all the doctors had failed." Says Tuke, "I want medical men who are in active practice to utilize this force, to yoke it to the car of Apollo, and rescuing it from the eccentric

orbit of quackery, force it to tread with measured steps the orderly paths of legitimate medicine."

The report on *Surgery*, by N. Sewell, M.D., carefully reviews recent progress in this department, and gives a good *résumé* of surgical pathology and therapeutics upon a number of important subjects that are now exciting discussion, such as cancer, leukæmia, tuberculosis of joints, antiseptic treatment, excision of part of the alimentary tract, radical cure of hernia, echinococcus cysts of liver, gastrostomy, laparo-splenotomy, nephrectomy and nephrotomy, empyæma, extirpation of larynx, nerve-stretching and suture, litholapaxy, and several other important topics of present interest.

F. W.

ART. XXV.—*The Surgery of the Rectum, comprising the Lettsomian Lectures on Surgery, delivered before the Medical Society of London, 1865.* By HENRY SMITH, F.R.C.S., etc. Fifth Edition. 8vo. pp. 185. London: J. & A. Churchill, 1882.

THE author in his introductory chapter disclaims the idea of making this a treatise on Diseases of the Rectum, and says that in each new edition he has contented himself with the fragmentary style he adopted originally, although he has made considerable additions to the work, warranted by his largely increased experience. He also puts here some remarks on the general subject of Diseases of the Rectum, pointing out the imperfect acquaintance with this subject of many general practitioners, and even of some surgeons. The ordinary methods of examination are given, and the advantage of sometimes employing anæsthesia is dwelt upon, as well as the importance of acquainting one's self with the condition of all the organs of the body.

After this the author, in the first lecture, enters upon the consideration of fistula in ano. He calls attention to the fact that in the majority of cases the first pathological change in this trouble is an inflammation of the cellular tissue around the rectum, the cases where it begins with an irritant within the bowel being exceptional.

He alludes to the occasional great difficulty of finding the *external* opening, even when there is an extensive fistula. But, taking his own account, this seems to be more dependent upon want of thoroughness and lack of acquaintance with, or suspicion of, the possible states of this region than upon any inherent difficulty of discovering them.

In the majority of cases, he says, the opening into the bowel is close to the anus; but he thinks an erroneous practice is sometimes the result of regarding this well-established rule as invariable. When no internal opening can be found, he thinks it a mistake never to carry the incision for relief higher than the point at which this opening is usually situated.

The loss of power of the sphincters, which sometimes follows their division in laying open a fistula, the author attributes to the division of the internal sphincter; this he thinks more dangerous than dividing the external sphincter in several places. This accident is fortunately not common, nor incurable. His own treatment of it consists in the frequent introduction of bougies, to stimulate the muscles to healthy and vigorous

action, and, when necessary, the excision of radiating portions of skin about the anus.

The important bearing of stricture of the rectum upon fistula in ano is next discussed. In regard to this, the conclusion drawn from the author's experience might well stand alone. It is only weakened by a needless and inconsequential comparison with the relation of stricture of the urethra to fistula in the perineum. For, in the latter case the stricture lies further on than the internal opening of the fistula, which may be caused by the obstruction to and damming up of the urine; while in the former the stricture may be above the fistula—is likely to be, in fact, and happens to have been so in the cases he cites to establish his theory. If it were not so, it would have been divided in the futile operations of which he speaks. Nevertheless, the correctness of the opinion that stricture of the rectum may coexist with fistula in ano and seriously complicate it, as well as interfere with the success of its treatment, may not be questioned. The theory is not so important as the fact, and the author wisely remarks: "It is easier to overlook this condition than is imagined; we are too apt, when one symptom or morbid phenomenon is presented to us readily, to pay too much attention to that and overlook other and less striking manifestations of disease."

The author lays great stress upon the necessity of thoroughly dividing the external sphincter in operations for fistula—though, as a matter of fact, the depth of the incision must usually be determined by the course of the fistulous track. Stuffing and plugging the wound he objects to; but says it should be kept open by occasionally passing a probe along it, and inserting a small piece of lint between its edges from day to day.

The occurrence of disease of the bones of the sacrum may, as he points out, interfere with the healing of a fistula. This must, of course, be heeded.

Prompt and thorough performance of the operation for fistula is always desirable, and the author condemns the timid practice of some medical men who poultice indurations near the anus until pus forms and comes to the surface.

True internal fistula—where there is an internal, but no external, opening—is rare and sometimes very hard to discover. The author dwells upon these points and cites interesting cases that illustrate them. He next passes on to speak of fistulae too complicated for operation, and advises against operating in cases when there is tubercular disease of the lungs.

This concludes the first lecture. The second treats of stricture, cancer, and polypus of the rectum. The first part—about stricture—is introduced with a good story of a surgeon who was notorious for detecting these abnormalities. This man had operated with a bougie upon a lady, and her husband came to him with a horsewhip, to castigate him for the supposed liberty he had taken with his wife. So persuasive, however, were the surgeon's representations, that the enraged husband not only omitted the horsewhipping, but forthwith submitted to the introduction of a bougie into his own rectum.

After speaking of the operations of stretching and splitting, the author calls attention to the advisability of examining the rectum in inexplicable cases of persistent diarrhoea—*apropos* of which we note a recent account of a case where an industrious and curious surgeon found a piece of beef bone in the rectum to be the cause of a chronic diarrhoea which had baffled those who had treated the patient before him. He also points out

the possibility of strictures of the bowel high up, and the advisability of lumbar colotomy for their relief.

The insidious approach of cancer of the rectum is next considered, and the difficulties of its early recognition. The general practice of avoiding the use of mechanical dilatation in obstruction due to cancer the author would modify by the careful use of the finger or bougie when ulceration has not taken place. His suggestions for treatment are: to avoid farinaceous food, and to inject one or two grains of sulphate of copper in an ounce of water, with a few minims of laudanum, to check hemorrhage and delay ulceration. Lumbar colotomy may be useful, and excision of the morbid growth may be practised if the surgeon can remove all of the new formation without greatly endangering the life of the patient.

Polypus of the rectum is sometimes hard to detect, especially if situated high up, and this fact furnishes the author another opportunity to insist upon thoroughness in examining the rectum in all diseased conditions. He thinks that polypi are much commoner than is generally supposed. They ought to be removed, of course; and this may be done with scissors, knife, or clamp and cautery.

The third lecture treats of hemorrhoids and prolapsus. The author quotes Mr. Gay against the dependence of the former upon hepatic disturbance; but expresses no opinion of his own. To the ordinary rule of removing external hemorrhoids he adds the caution not to remove so much cutaneous tissue as to leave the anus to be contracted by cicatricial tissue. The adage "*ne sutor ultra crepidam*" is illustrated, by the way, in a case he cites, where an obstetrician did great damage by falling into this error.

For the treatment of internal hemorrhoids that are small, granular, very vascular, and prone to bleed, the author recommends applying nitric acid. For the larger tumours he opposes the use of the ligature and employs a clamp and cautery, after the manner of Mr. Cusack and Mr. Henry Lee. To the clamp he has made some modifications, resulting in a very useful instrument, figured in the text. He speaks of slow recovery, hemorrhage, ulceration, abscess, retention of urine, tetanus, pyemia, and even death, as following the use of ligature. The use of the clamp and cautery, he says, has not been the cause of death in any case, except one, that he knows of; though three cases of his terminated fatally. Severe hemorrhage has followed; but this he attributes to neglect of proper precautions. In 400 cases which he reported to the Medical Society of London in 1875, no troublesome bleeding had occurred. Occasionally on the first action of the bowels blood had been passed; but this, he thinks, had oozed into the rectum soon after the operation. In the majority of his cases the patients got up and about in from four to seven days, some even sooner.

Prolapse of the rectum, Mr. Smith treats also with the clamp and cautery, removing, in addition, with scissors, three or four folds of the loose skin over the sphincter, if this be dilated or weakened. To prevent contraction of the rectum from too free ablation of the mucous membrane, he makes his patients pass a full-sized bougie twice or thrice a week. Pain after operations with the clamp and cautery he soothes by applying sponges wrung out of hot water.

The occasional occurrence of retention of urine must not be forgotten after operating in this way. Accumulation of flatus may be obviated by



careful dieting, avoiding bread and other farinaceous food, and by the use of medicines.

Mr. Smith's book closes with a short chapter on Painful Ulcer of the Rectum. Attention is called to the fact that the symptoms of this disorder sometimes simulate those of uterine disease, and a case is cited where this led to error. Many cases of painful ulcer, he says, may be cured with applications of solid nitrate of silver, or ointment of gray oxide of mercury, one part to sixteen; or the daily introduction of a bougie of wax and yellow soap, and careful regulation of the evacuations. When there is spasm of the sphincter and he practises an incision to the bottom of the ulceration, deep enough to produce a sensible dilatation of the anal orifice, but not completely through the sphincter. If the contraction upon the finger is much lessened, this is all that is necessary.

Once more the author speaks of the possible existence of complications in rectal disease, and advises careful examination to discover them, or to exclude them from the diagnosis; and closes his book with suggesting for the treatment of superficial cracks at the margin of the anus: the prevention of constipation, ablutions with soap and water, and the application of strong solution of nitrate of silver by means of a brush. Only occasionally has he been compelled to make incisions through them, as in the ordinary painful ulcer. Venereal ulcers, he says, are usually amenable to cleanliness and nitrate of silver.

From this analysis it will be seen that we have here a valuable contribution to the literature of surgery. The author's large experience and recognized standing add weight to all of his recommendations. But he has not escaped certain faults of method, which his matter might well have been spared. The most important of these is that which he confesses in his introduction—the fragmentary style with which he has contented himself. It does not help the reader or the reviewer that an author should be frank in acknowledging the difficulty he has placed in his way; and we think it would have been better if this one had not saved his own labour at the expense of those whom he addresses. We find, for example, that his additions in successive editions seem to have been simply written at the foot of his sections, so that some are utterly at variance with what precedes or follows them. Thus on page 122 he speaks of reporting 400 cases of operations, and on page 128 he says: "Since the period at which I commenced the use of the clamp, which was in July, 1861, I find that I have treated thirty-five cases either of internal hemorrhoids or prolapsus of the rectum in this way." On page 143, he speaks of 120 cases, of 200 or 300 on page 145, of 450 on page 156, and of many hundreds on page 163. It would be well if in the next edition he would systematize his statements, and not let any part of a work published after 1882 bear the unchanged impress of 1861.

There are also some faults of diction in this book which might be corrected. "Timeous" is obsolete; the "entire of" would be better expressed as the "whole of;" to speak of a patient with cancer as having a "malignant aspect" is rather hard on the sufferer; "this delirium *continued* more boisterous," is paradoxical; "frightened to undergo" gives the idea of being afraid, but not as we are used to it; "I removed the entire disease" is inaccurate; while "smartish" sounds odd to our ears though we are American; and "super-pubic region" ought to be "*supra*-pubic."

It is rather entertaining, after reading, on page 101, of his clamp, "I cannot see that there is room for any further improvement, the instrument,

in my opinion, being now as well adapted for its purpose as it possibly can be." to find on page 103, "Since the above was written I have made this addition to the clamp, and have found it answer the purpose required most admirably;" and on the same page: "Since the last edition of these lectures was published, I have made what I consider to be a valuable addition to the clamp."

It would be not unworthy of the author's care and a great advantage to his readers if, when he next has opportunity, he would put his views into more systematic shape. If his book were divided into chapters and sections, if his new ideas were substituted for the old, and not simply tacked on to them, and if we could have an orderly, concise presentation of his mature opinions, instead of a rather kaleidoscopic mixture of these and those which he has abandoned, his book would be in manner more excellent—in matter it needs no improvement.

C. W. D.

ART. XXVI.—*A Manual of Hypodermatic Medication.—The Treatment of Diseases by the Hypodermatic Method.* By ROBERTS BARTHOLOW, M.A., M.D., LL.D., etc. etc., Prof. of Materia Medica and General Therapeutics, in Jefferson Medical College of Philadelphia. Fourth edition, revised and enlarged. 12mo. pp. 365. Philadelphia: J. B. Lippincott & Co., 1882.

THIS work, which professes only to be a manual on "Hypodermatic Medication" (pronounced by our author as the correct orthography), is rather more comprehensive than is shown simply by its title.

An historical sketch of the introduction and growth of this means of administration of drugs is first presented, and is followed by a detailed description of the method, and of the various forms of syringe used for hypodermatic medication. We recommend this second portion to the attention of the medical profession, and especially what Prof. Bartholow says in reference to solution and dilution of drugs for subcutaneous use, viz., that this should not be too potent, nor too diffuse, the disadvantage of both extremes being particularly expressed; he cautions also against using old solutions from the fact of their deterioration in strength by the growth of organic matter (penicillium) at the expense of the alkaloid. We can readily understand how a practitioner may grow careless in using extraordinary doses of an old deteriorated solution, the usual effects not quickly following the administration, and that he may be sometimes frightened at the appearance of dangerous symptoms which have suddenly arisen after the use of a freshly prepared solution in the same extraordinary dosage. The concentrated solutions work mischief by the local irritation and too rapid absorption, the too diffuse dilution does harm by the formation of an indurated nodule and possible subsequent suppuration. The risks of injecting into the vein of a novitiate even a moderate dose of morphine are also described.

The author agrees strongly with the late Prof. Bernard in prophesying a more extended use of this method, quoting as follows: "Je pense même, à raison de ces circonstances, que l'absorption souscutanée, qui n'a été employée jusqu'ici sur l'homme que par l'exception, devra devenir méthode générale pour l'administration de tous les médicaments énergiques, et à l'état

de pureté." The therapeutical effects "of a drug must differ not only in degree, but also in kind, according as it enters the blood through the stomach or by the subcutaneous absorption. The subcutaneous use of certain drugs has developed very valuable therapeutical properties, which the stomachal administration had not even suggested." He presents a good table of the "therapy" and indications for the use of hypodermatic remedies.

Prof. Bartholow devotes one-quarter of the bulk of his memoir to the consideration of the subcutaneous use of morphine. He frequently touches upon the question of its abuse, and presents his own treatment for the cure of morphomaniacs. He pleads especially against permitting patients to practise the use of the hypodermatic injection upon themselves. We can hardly agree with the author in approving the long list of diseases for which he claims the benefit of morphine treatment; we also observe some inconsistency in the indications for its use, for instance (p. 111) he says, "cases in which constipation existed have thus been corrected during a course of hypodermatic injections. . . . If then, constipation exists in cases in which it may be desirable to use the hypodermatic injection of morphia, this circumstance need not be considered a contra-indication;" and we find in speaking of continued use of morphine (p. 124), "so insensible does the mucous membrane become that the feces are retained for lengthened periods, hemorrhoids form. . . . In some individuals, it is true, the hypodermatic use of morphia . . . does not interfere with the normal and regular action of the intestines; but these cases are exceptional." We do not agree in the recommendations for the use of morphine in hysteria, believing it is especially contra-indicated in that disease. Its use in syphilitic neuralgia, as recommended by Prof. Bartholow, is in our opinion unwise, and not in agreement with modern views of the treatment of that diathesis, nor can we concur in his belief that marked improvement in syphilitic lesions of bones and muscles is to be imputed to morphine treatment. In our experience enormous doses of morphine by subcutaneous method are required to dull the neuralgic pains in syphilis, and with the result of increasing the nervous depression and malaise; moreover, a saturation of the blood with morphine will prevent the absorption of veritable syphilitic remedies, such as mercury and iodide of potassium. We wish that Prof. Bartholow had considered more in detail the indications for the use of morphine in sunstroke; for we doubt whether its curative value goes beyond the benefit of a stimulating effect upon the systemic circulation during the first symptom of shock in this disease; its use subsequently and continuously would be hardly justifiable in the present state of our knowledge of the risks of cerebral congestion.

A description of the use of atropine is well placed before the reader, and the present state of professional opinion of the physiological antagonism between the drug and morphine is quite fully detailed. We regret that Prof. Bartholow had not distinctly stated that the control of the whole range of symptoms of the toxical effect of either of these drugs by the other is not fully warranted; by careful reading this inference can be drawn, but it would be well to refute this fallacy among some of our profession, until the danger (from a careless neglect of the appropriate indications) of combining the poisonous action of both remedies in a given case of poisoning shall be done away with.

Further remedies whose "hypodermatic" use is discussed in the book before us are: duboisine, hyoseyamus, alcohol, chloral, chloroform, ether,

nux vomica, ergot, ustilado, maidis, digitalis, conium, tabacum, aconite, physostigma, curara, hydrocyanic acid, colchicum, pilocarpus, muscarine, caffeine, carbolic acid, resoreine, arsenic, mercury, silver, iodine, iron, water, pepsine, ammonia, and salines. With such a long list of remedies it is easily seen that we have a work of great value for reference in the special domain of therapeutical literature.

R. A.

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ART. XXVII.—*Lectures on Diseases of Children. A Handbook for Physicians and Students.* By Dr. EDWARD HENOCH, Director of the Clinic and Polyclinic for Diseases of Children in the Royal Charité, and Professor in the University of Berlin. Svo. pp. 357. New York: William Wood & Co., 1882.

AN experience of thirty-seven years in the field of children's diseases authorizes the publication of this addition to the literature of diseases of children. The book contains an exceedingly interesting and valuable series of clinical descriptions of disease. Only the special symptomatology of diseases of children is considered, omitting matter more properly treated in works of general and special pathology and surgery, or cases in which the symptoms are similar to the same affections in the adult. The first section on diseases of the new-born is followed by some interesting pages on diseases of infancy. Part III., which treats of diseases of the nervous system, opens with remarks on convulsions of childhood.

Rickets is regarded as the etiological factor in most cases of convulsions usually attributed to dentition, but irritation from functional disorders of the digestive organs occupies a first place in these cases. Overloading of the stomach or intestinal canal is also an important factor, but the author has never observed a case of convulsions certainly attributable to worms in the intestinal canal. "In epilepsy a great many useless drugs have been employed for a long time; bromide of potassium and hydrate of chloral, which have been extensively used in recent times, appear to possess greater importance." Chloral and morphine are recommended in persistent convulsions. Probably the principle in obstetrics that will not allow a woman to die undelivered, is at the bottom of the above advice, which might be read, do not allow a child suffering from convulsions to die unrelieved.

Paucity of therapeutic resource emphatically characterizes the entire work. In the section on respiratory diseases in pseudo-croup, the virtues of salt pork as an external application, and sugar-water and milk as lubricants to the mucous membrane, are extolled. (p. 135.) True croup is believed to be inflammatory and a separate disease from diphtheria. Local bleedings by leeches applied over the upper part of the sternum, tartar emetic, and mercurials, are advised. "Children who can cry for a long time without coughing do not suffer from bronchitis." In grave "cases of broncho-pneumonia, the ability of the child to nurse is seriously impaired." "This disease can be determined by physical examination only when the foci are so numerous or confluent that the intervening air containing parenchyma is no longer capable of masking the symptoms of solidification." Such sentences evince the accuracy of the clinical obser-

vations and show that the book is well worthy of perusal. In the treatment of pertussis the experience of the author differs from that of American physicians. "I have hardly ever seen any good results from sending the patients to a watering place, whether at the sea-shore or in the mountains." "In severe cases in which as many as twenty paroxysms occur daily, I have come to rely on one drug alone, morphine, which I prefer to all drugs, especially to the dangerous atropine." Carbolic acid inhalations are recommended. The section on diseases of the circulatory organs is most meagre. Mention is made, however, that cyanosis can occur without mixture of the venous with the arterial blood. Its pathology is rather some anomaly of cardiac evolution which cripples the power of the heart.

Part VI. treats of the digestive organs. In Part VII. the diseases of the uropoëtic organs receive such well considered attention as to leave little room for criticism. Part VIII. is devoted to infectious diseases, and, in connection with diphtheria, tracheotomy is strongly advocated. Rheumatism, scrofula, and rachitis occupy Part IX.; diseases of the skin, Part X. The contents of these chapters bear out the criticism already made. The descriptions of disease are careful and accurate, but in regard to treatment very little is said, and that little is not strikingly original.

E. T. B.

ART. XXVIII.—*Health Reports: 1. Ninth Annual Report of the Secretary of the State Board of Health of the State of Michigan for the fiscal year ending September 30, 1881.* 8vo. pp. 563. Lansing, 1882.

2. *Tenth Annual Report of the Board of Health of the City of Boston for the financial year 1881-82.* 8vo. pp. 111. Boston.

3. *Sixth Annual Report of the State Board of Health of Wisconsin for 1881.* 8vo. pp. 146. Madison, 1882.

1. THE *Michigan* report comes to us as usual loaded with rich fruits of the work of the indefatigable Secretary and his earnest co-laborers. The volume is divided into two parts, the former of 62 pages made up of records of the work of the Board, and the latter of 501 pages comprising the papers presented at the Sanitary Conventions held at Flint and at Battle Creek during the year, and also eighteen papers added by members of the Board of Health and its correspondents, etc.

As the various articles contributed as above stated are forty-eight in number, our restricted limits preclude us from attempting a notice of them all, and we have therefore selected a few possessing special claims to novelty or importance. Among these may be enumerated an essay on "Some of the Dangers to Health pertaining to Pioneer Life," by A. W. Nicholson, M.D., of Otisville, who directs the much needed attention of new settlers to the vital necessity of providing dry habitations, pure water, and to guarding against disease germs in and upon the soil. Dr. Henry B. Baker contributes an excellent paper on the "Systematic Study of the Causes of Sickness and Death," in which he manages to invest this rather dry subject with a good deal of interest by the aid of the ingenious diagrams which he has designed. A thoughtful article on "Personal Sanitary

Responsibilities," by Mr. John K. Allen, of Lansing, deserves extended circulation, because it aims at the root of that great obstacle to all sanitary progress with which Boards of Health and Hygienic authorities everywhere are compelled to wage a continual warfare, viz., the want of popular appreciation of their philanthropic efforts. Our author quotes as a sort of text the admirable remarks of Lord Derby at Liverpool some years since; "no sanitary improvement worth the name will be effected, whatever acts you pass, or whatever powers you confer upon public officers, unless you can create a real and intelligent interest in the matter among the people at large. Whatever administrative measures can do—and they can do a great deal—they can never supersede the necessity for personal and private care. The State may issue directions, municipal authorities may execute them to the best of their power, inspectors may travel about, medical authorities may draw up reports, but you can't make a population cleanly or healthy against their will, or without their intelligent co-operation. The opportunity may be furnished by others, but the work must be done by themselves." From these downright facts Mr. Allen deduces a timely lesson as to the need of forming rapidly and universally a correct public opinion in regard to the all-important subject of Hygiene. Dr. Bela Coghlan, of Flint, contributes an article on "Consumption: Is it a Contagious Disease? What can be done to Prevent its Ravages?" in which, after recounting some of the best recorded examples of the direct conveyance of this dreaded malady from the sick to the well, she concludes with Dr. Budd, that tubercle is a true zymotic disease in the same sense as typhoid fever or syphilis, and that like them it never originates spontaneously, but is perpetuated by continuous succession; also that the tuberculous matter itself is, or includes the specific poison of the disease, and constitutes the material by which phthisis is propagated throughout society, so that "by the destruction of this matter on its issue from the body by means of proper chemicals or otherwise, seconded by good sanitary conditions, there is reason to hope that we may eventually, and possibly at no distant day, rid ourselves entirely of this fatal scourge to mankind." In accordance with these views our author recommends the avoidance of meat or milk from tuberculous animals, and of the intimate association of healthy individuals with consumptives, very much as it is now much more strenuously urged on the basis of Koch's discovery of the bacillus tuberculosis. An essay on "Nostrums in their Relation to the Public Health," by Prof. A. B. Prescott, M.D., of Ann Arbor, gives us some interesting information respecting these dangerous frauds. Among eight "Pain Killers" examined, six contained spirit of camphor, four oil of sassafras, four red pepper variously compounded with ammonia, guaiac, chloroform, and myrrh. Of six ague-cures especially discovered for the benefit of those who could not take any preparation of Peruvian bark, five contained the cheaper chinchona alkaloids and the sixth was a dilute tincture of chloride of iron. The numerous remedies for epilepsy proved to be generally disguised solutions of bromide of potassium. The cures for the opium habit were as a rule preparations of morphia, and so on to the end of this disgraceful chapter of human folly and deceit. As an antidote for these manifold evils Dr. Prescott advises the enactment of a law requiring every medical preparation to be marked when offered for sale, with the names and quantities of its ingredients. The valuable popular instructions for the prevention of diphtheria, of scarlet fever, of smallpox, and of contagious diseases generally, are reprinted in an improved form; a judicious series of questions for

candidates before the Board for Examination in Hygiene, appears on pp. 232-236; and the latter half of the volume is chiefly occupied by an exhaustive detailed summary of the diseases in Michigan in the year 1880, compiled in the office of the State Board of Health from replies by regular correspondents of the board.

2. From the *Boston* Board of Health Report it appears that the city's sanitary condition is quite satisfactory, the death-rate showing a gratifying decrease from the year previous, as well as from the average mortality for several years past. And yet whilst Boston has fortunately escaped any such epidemic of smallpox as we in common with many other cities have suffered, her death-rate of 22.67 seems mournfully high, as compared with our mortality of only 17.17 per thousand in 1879. Although no essays upon sanitary subjects are given in this report, the material obtained during the operations of the Health Board has been carefully utilized and much valuable information is furnished. The chapter on smallpox is illustrated by an excellent photograph of the legs of a patient in the eleventh day of severe discrete variola, and contains sundry tables which tend to confirm in a general way the views of Seaton and others, that the amount of protection afforded by a previous vaccination is closely proportionate to the size, number, and goodness of the scars remaining. In regard to diphtheria, it is stated that of the 1706 cases reported, the surrounding premises were found on inspection to be in bad sanitary condition in 1405 instances. Of the total number of cases of diphtheria reported 601 were fatal, a mortality of about 35 per cent. The various school buildings, 163 in number, have been examined as usual, and gratification is expressed in being able to record a marked improvement in their general sanitary condition, as compared with previous years, defects of drainage being detected in only about 28 per cent. of the entire number.

3. From the *Wisconsin* Board of Health Report we learn that the sanitary condition of the people of that State has been generally good, notwithstanding the intense cold of the winter of 1880-81, which bore as usual heavily upon individuals in advanced life. Of the contagious diseases smallpox has happily been rare, and with a single exception the few instances of its development have occurred on the borders of the State. A special circular in regard to the modes of restricting this dreaded disease was issued in Feb. 1881, and being widely distributed by the public press is believed to have done good service in securing the general adoption of precautions tending to prevent the spread of an epidemic of variola. Diphtheria is stated to have been prevalent in all parts of the State, and to have proved fatal to more than 2000 persons during the year. The fact of the contagiousness of diphtheria is strongly emphasized, and very wisely, we think, complete isolation of persons sick with this disease is urged, as being quite as important as it is in smallpox. Scarletina has likewise been prevalent, and the danger of its infection being disseminated through the agency of schools is especially insisted on. Typhoid fever is reported to have been light in its visitations.

The first paper accompanying the report is one entitled "Hints on Hygienic Education," by Mrs. Wm. P. Lynde, of Milwaukee, who adopts the view that every church in the country should be opened at least once a week for instruction in sanitary science, and advocates the establishment of systematic teaching of hygiene in all schools, both public and private, somewhat on the plan now enforced in the French Republic, with such infinite advantage to all classes of the community.

In the next essay on "Hygienic Clubs for Women," Dr. Helen M. Bingham, of Milwaukee, urges the special importance of hygienic education for females, because they must guard the health of our entire next generation at the most eventful period of its existence, and recommends that this desirable object should be accomplished by the reading and public discussion of sanitary papers and the listening to hygienic lectures, etc.

The most elaborate and valuable paper contributed to the volume is that on "The Growth of Children," by Geo. W. Peekham, M.D., teacher of biology in the Milwaukee High School, which is illustrated by a large number of diagrams and tables, and gives the results of an extended series of observations upon the pupils of the Wisconsin schools. The influence of nationality, climate, density of population, etc., upon height and weight, were carefully studied, and some of the more important conclusions arrived at were: 1st. The rate of growth in the two sexes in Wisconsin is such, that the boys are taller until the twelfth year, and heavier until the thirteenth; between thirteen and fifteen the girls excel the boys both in weight and in stature. Girls nearly cease to grow when about seventeen years of age. 2d. Children of pure American (third generation in this country) descent are taller than those of foreign born parents; but when compared in weight with children of German parents are on the whole lighter. 4th. School children in Milwaukee are taller than school children of corresponding age in Boston. The weight of boys in Milwaukee is greater than that of boys in Boston. Girls in Boston are very slightly heavier than they are here. The superiority of height is probably due to the minor density of population in Milwaukee, as compared with Boston, causing the struggle for existence to be less severe, and the life to have fewer urban disadvantages than in New England. 5th. The rate of growth of Germans is markedly modified by residence in this country through one generation. The offspring from intermarriages between Americans and Germans seem to attain the height of the taller parent. 7th. The growth of the body and of the lower extremities takes place in such a way that the length of the body of the girl is less than that of the body of the boy until the tenth year, and thereafter greater until the sixteenth. From fifteen to eighteen the bodies of girls grow only two inches, and the bodies of boys over four. For the lower extremities at nine years, those of the girl are longer, at eleven shorter, and from twelve to fourteen, again longer. At fourteen the lower extremities of the girls almost cease growing, while those of boys increase by four inches between the ages of fourteen and nineteen.

The remaining papers in the volume are one giving a good exposition of our knowledge in regard to "Colour Blindness," by Dr. Edwin M. Bartlett, in which he indorses the excellent recommendation of the Surgeon General of the Marine Hospital Service, that examination of seamen, pilots, etc., for colour blindness should be made compulsory by law; and a pains-taking essay by Dr. G. F. Witter, of Grand Rapids, on "Tobacco and its Effects," which might form no insignificant appendix to King James's famous counterblast against the weed.

J. G. R.



ART. XXIX.—*The Diagnosis and Treatment of the Diseases of the Eye.*

By HENRY W. WILLIAMS, A.M., M.D., Professor of Ophthalmology in Harvard University; Ophthalmic Surgeon to the City Hospital, Boston; Ex-President of the American Ophthalmological Society; Vice President of the International Ophthalmological Society, London, 1872, etc. 8vo. pp. 464. Boston: Houghton, Mifflin & Co., 1881.

IN this elegant production of the Riverside Press, Dr. Williams gives us the results of the experience gained in an unusually long and successful practice. The book belongs to the class of manuals rather than of more elaborate text-books, and is intended as "a practical guide, serviceable to the general practitioner and student." Though the ophthalmological interests of this class have, in the last year or two, been abundantly cared for by numerous special authors, none of them have presented the subject in a more attractive form, whether we consider the general appearance of the volume or the literary style of its text.

Excellent descriptions of the diseased conditions of the different parts of the eye are preceded by a short sketch of the anatomy of each, and the treatment recommended is generally in accord with that usually pursued by American ophthalmic surgeons. The most notable exceptions to this are the disuse of mercury in iritis, even of the syphilitic form, the disapproval of Sæmisch's incision of the cornea in sloughing keratitis, and of iridectomy in recurrent iritis, the condemnation of the local use of calomel in phlyctenular keratitis, as one of "the remedies still remaining among the relics of ancient therapeutics," and an exceptional fondness for pilocarpine. This latter drug is not only recommended in phlyctenula, pemphigus, and ulcer of the cornea, and in choroiditis and scleritis, but is suggested as a therapeutic means in myopia. The author, however, by no means makes it clear how pilocarpine and eserine can "cause accommodative action without at the same time requiring increased convergence," or how they can do anything but harm to the myopic eye. Rather oddly, he has no faith in these remedies in glaucoma, where everybody else uses them.

The theories of the ophthalmoscope and of refraction and accommodation are clearly explained and beautifully illustrated by white-lined diagrams on black ground. It is to be regretted that only a few lines are devoted to the metric system of numeration of lenses, particularly as the student is likely to be confused by the loose statement that "we express the power of lenses by fractions, of which the numerators are 1 and the denominators the focal distances in inches, or, in the metric system, in dioptries."

As few surgeons in this country have had so extensive an experience in operations for cataract as Dr. Williams, his chapter on this subject will be read with special interest. He rather favours the median-flap extraction of Liebreich and Lebrun, and says that extensive trial has proved the value of the corneal suture proposed by him ten years ago.

G. C. H.

ART. XXX.—*The Human Brain—Histological and Coarse Methods of Research—A Manual for Students and Asylum Officers.* By W. BEVAN LEWIS, L.R.C.P. (Lond.), Deputy Medical Superintendent to the West Riding Lunatic Asylum. Pp. 163. London: J. & A. Churchill, New Burlington Street, 1882.

WEST RIDING LUNATIC ASYLUM, in England, and La Salpêtrière Hospital, in France, have become so justly famous as centres of clinico-pathological research, that we hail with pleasure any new work from either of these sources of supply. The volume before is one which is excused by a "genuine want," these trite words being not simply a prefatory mercantile apology. The want is a generally prevailing one, not only amongst asylum medical officers and students, but in the profession at large.

The coarse examination of the brain and its membranes is treated of in Part I., which comprises eighty-one pages.

We cannot too highly commend this portion of the book. We are safe in making the sweeping assertion that not one in a thousand of our graduates in medicine is competent to undertake the naked-eye examination of a brain. At a recent historical autopsy the truth of this assertion was painfully evident. We do not know how it may be abroad, but we have noted in this country that even some of our most skilful microscopists are at sea when making an examination for the coarse appearances presented to the unaided vision. They have seemed to us sometimes to regard these appearances as beneath their notice.

That Bevan Lewis, himself one of the best neuro-histologists of the world, is far from sharing in any such feeling is evidenced by the following quotation from his introduction.

"Important and necessary as are the minute investigations made by microscopic agency into the normal structure of the brain or its pathological deviations, we must guard ourselves from the very serious error of considering this method as essential or exclusively necessary in these studies. \* \* \* The skilled obstetrician recognizes as an invaluable acquirement that *tactus eruditus* which a constant and intelligent employment of a special sense can alone confer; and no less should the histologist endeavour to obtain a special visual tact, a highly refined and educated visual power, which can alone enable him to recognize by the unaided eye, appearances which pass wholly unnoticed by the casual observer. I cannot too strongly insist upon this point, for he who would successfully study the morbid anatomy of the brain must, as in the morbid anatomy of other tissues, begin seriously to educate the eye to the coarse appearances presented to the unaided vision."

Some of those who are familiar with the best methods of removing and dissecting the brain, to bring out its chief anatomical features; who understand its superficial topography, and its internal structure as shown by sections made in various positions and directions—are incapable of determining as to abnormalities of the membranes or bloodvessels, or as to consistence, colour, etc.

We feel that we would be doing a good service to enumerate many of the special directions and important facts found in Part I.; but we will only have space for a very few.

Careful directions are given for the examination of the larger venous sinuses.

Between the various investments of the brain are four great cavities, which must be understood by those attempting the coarse examination of the brain. These are described as follows: 1. The subdural space betwixt dura mater and the parietal arachnoid. 2. The arachnoid cavity formed by the arachnoid sac. 3. The subarachnoid cavity betwixt visceral arachnoid and pia mater. 4. The epi-cerebral space betwixt pia mater and cortex. Very seldom, indeed, are distinctive observations made on these cavities, or their contents.

The chapter on the arterial system of the brain is full of matter. The arrangement of the bloodvessels receives special attention. With reference to arterial tunies the following points are recommended to be noted: 1. Colour and capacity. 2. Relative toughness of coats. 3. Tortuosity or kinks in the course of vessels. 4. Local bulgings or constrictions from diseases of texture. Tortuosity and kinks in smaller vessels are suggestive of previous forcible distension from congestion. Local bulgings may be due to aneurismal dilatations, to the different forms of arteritis-atheroma, tubercle, syphilitic gummata, or to the impaction of a thrombus or embolus.

The remarks on the nutrient vessels of the base are of importance, because very frequently these are passed by carelessly, although their degeneration or occlusion is often the explanation of hemorrhages or softened areas of large extent and in vital locations.

The mode of investigating the physical properties of the gray and white substance of the brain is fully presented, the more profound anomalies in consistence, colour, specific weight, and other physical properties being illustrated by reference to some of the *special diseases of texture* to which nervous centres are liable.

Several of the simplest and best methods of determining the volume and weight of the entire brain, or any of its separate parts, are given. When we consider the great ease with which the volume of the brain can be estimated by the displacement of fluid, it is surprising that this process is so generally neglected. Dr. Haek Tuke's method, for instance, is to take a vessel of convenient size and shape, with a capacious spout placed at an acute angle with the sides. The brain is immersed in water, which is poured into this vessel up to the level of the spout. The displaced water, as it escapes from the spout, is caught and measured, affording an exact criterion of the actual bulk of the brain.

For determining cranial capacity, absolute weight, specific gravity, etc., methods equally simple and practicable are described.

The directions for the removal and dissection of the brain are in general good, although scarcely full enough, and in a few particulars to be criticized. For examining the internal structure of the hemispheres we prefer, instead of exposing the *centrum ovale minus* and *centrum ovale majus*, to enter the ventricles, and make vertico-transverse sections from within outwards, keeping all parts of the brain together until the completion of the coarse examination, after the manner described by us in the *Philadelphia Medical Times*, April 24, 1880.

A few brief but clear directions about the best methods of tracing the fissures and convolutions, and noting their deviations from usual appearances, would, we think, have been of more practical value than the tabulated list of synonyms from Ecker. The excellent series of photographs from Bischoff's work on the convolutions will, however, prove of service to the investigator, and in a measure supply his want.

In every page of Part II., in which the methods of conducting the minute examination of the brain are detailed, the author shows his practical familiarity with the subject about which he is writing. The description of the ether freezing microtome, and the remarks on the great advantages of the ether freezing method of preparing brain tissue, are instructive.

The serious drawbacks to the use of corrugating re-agents in the examination of the brain are strongly presented, the shrinking of tissue and the modifications of structure produced, being the most important. Many pathological and normal appearances are wholly obliterated by the "hardening processes." The freezing method he claims should be chiefly trusted; but he does not believe that we can yet dispense with the older process of hardening.

The best methods for the preparation of hardened brain are given. For comparatively small specimens the process of hardening by Müller's fluid and potassium bichromate is recommended. The specimen is first immersed in methylated spirit for twenty-four hours; this is then replaced by Müller's fluid, which is renewed in three days and again in a week by a fresh quantity. Instead of using Müller's fluid at the second renewal, a two per cent. solution of potassium bichromate may be substituted. At the end of the second week a solution of the latter of double the strength may be added; and if, at the termination of the third week, the mass is still pliable, a solution of chromic acid may be used.

Other methods are described, osmic acid receiving high praise. Imbedding and section-cutting, and the processes of staining and mounting, are thoroughly discussed. The few pages devoted to a comparison of the best processes of staining special regions of the brain and spinal cord are worthy of particular attention. Explicit directions are given for the preparation of nervous tissue in the fresh state, both by those of section-cutting and preparation of frozen tissues, and the methods of dissociation and teasing out of fresh tissues. The films obtained by the methods of dissociation, as well as those of the freezing microtome, afford much valuable information upon histo-chemical examination.

In Part III. is given a list of all the more useful re-agents and mounting media which the student will require in the prosecution of the minute examination of the brain.

This book will do much to encourage and stimulate the making of thorough autopsies of the brain, and will thereby greatly advance the good cause of medical science.

C. K. M.

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ART. XXXI.—*A Practical Treatise on the Diseases of the Uterus, Ovaries, and Fallopian Tubes.* By A. COURTY, Professor of Clinical Surgery, Montpellier, France, translated from the third edition by his pupil, AGNES McLAREN, M.D., M.K.Q., C.P.I., with a preface, by J. MATTHEWS DUNCAN, M.D., LL.D., F.R.S.E., Obstetrical Physician to St. Bartholomew's Hospital, London. 8vo. pp. 810. Philadelphia: P. Blakiston, Son, & Co., 1883.

THE works of Prof. Courty have been well known here and in Great Britain, among gynecologists acquainted with the French tongue, and

we have often heard the one under review extolled very highly in comparison with well-known treatises upon the diseases of women in our own language. When we read the preface by Dr. Duncan, we are prepared to expect unusual excellence in the volume, and in the end are not disappointed. Dr. Duncan writes:—

“Among books devoted to diseases of women, none has been or is more important than that of Professor Courty, of Montpellier. It is the carefully elaborated and repeatedly revised work of a man at once imbued with the science and immersed in the practice of gynæcology; of one who has long lived in a centre of general science and learning, amidst an abounding population, and who enjoys the great advantage of combining in his sphere of practical activity, both hospital and private patients; two classes which differ in their circumstances and in their aspects for observation, favourable and unfavourable to the student.”

The volume opens very favourably, giving an elaborate introduction of 92 pages upon the *anatomy, physiology, and teratology of the organs of generation*, illustrated with 112 figures, many of them quite different from the very familiar illustrations of obstetrical treatises. This special part of the work is one upon which Prof. Courty expended much labour and research more than thirty years ago, and at later periods, producing several valuable monographs, parts of which have been embodied here. The portions of the introduction which have been compiled, have been well selected from the works of some thirty French, German, English, and American authors, prominent among which are those of Sappey, Richard, Dubois, Tillaux, Coste, Cruveilhier, Eisenmann, Schröder, Kussmaul, Fürst, Roze, and Duncan. The author has been particular to credit the original sources of the illustrations, rather than the authors of works in which they have been collected. We often see (“after Kussmaul”) appended to a cut, when Kussmaul credits another with it in his work. The fifteen plates from Roze, of anomalies of the vulva, will be new to many readers; more so, in fact, than others which have more recently appeared in journals upon the same subject. The plates of abnormal and double uteri have an additional interest, from the fact that several cases of parturition in women having such organs, have been reported within the last five years. Dr. Goodell, of Philadelphia, it will be remembered, had one in which the uterus was double; and he narrowly escaped performing laparotomy, to remove the fœtus, under the belief that it was extra-uterine. Dr. Salin, of Stockholm, did operate in a similar case, in which there was an obstruction in the cervix, and removed one cornu of the duplex organ with entire success. It should be borne in mind that there are several forms of double uterus; at least six that are quite distinctive, and that it is impossible during pregnancy to distinguish one of the types, the *partitioned*, from a single uterus; and almost so to decide in a completely bifid organ, whether it is such with one cornu impregnated, or a case of extra-uterine pregnancy. Very wise men have been mistaken, and it is only necessary to examine some of the plates in clinical reports, to understand why they should have been.

Chapter 1st, on the *diagnosis of uterine diseases in general*, is eminently practical in character, and one of the most carefully prepared articles upon the subject that we remember to have met with. It is equally adapted to educate the student, and to correct many errors which imitation rather than want of care have made too common in gynæcological investigations. The first part of the chapter treats of the signs which are indicative of the probable existence of uterine disease; and the second enters

very minutely into the methods of placing and examining the patient; due consideration being given to the feelings of the woman, especially if a virgin, and the risks of the exploration, local, and in its effects upon the nervous system. All of the methods known to science are considered, and those devised by Simon, Sims, Bozeman, and Noeggerath, carefully weighed; especially that of the first, the *rectal palpation*, a valuable, but as shown by its record, a sometimes fatal process. Weir's measure of the circumference of the hand that may be allowable, at less than ten and a quarter inches, would exclude the manipulative interference of many members of the profession, but still admit of many others whose hands are by no means small. A nine-inch hand dilates the rectum to three inches in diameter, a fatal distension under some conditions. Where this form of exploration is thought to be essential, we believe in calling in the services of one having very small hands to make the rectal palpation: one like Prof. Morisani, of Naples, or others who could be named at home, may render invaluable and safe assistance in such cases. The author, we notice, is careful to credit the various forms of speculum to their proper designers. For his own, he prefers the blade of Dr. J. Marion Sims, which he employs of four sizes, with movable handles, and has them made not only of metal, but, where acids or the cautery are to be used, of vulcanite and wood. He recommends that virgins should be examined either by the touch or speculum, with the knees always in apposition, so as to relax the hymen and avoid the risk of its rupture; and that the thighs should be completely flexed on the abdomen, and held there by the patient, with her hands on her knees. He uses the dorsal decubitus in this way, rather than the usual French position, with the feet upon chairs, or on the stirrups of a mechanical chair or couch; and recommends that a simple couch, ottoman, or table, should be preferred "to all those ingenious mechanical arm-chairs which only frighten patients."

Prof. Courty prefers the tent, to the use of any means of sudden forcible dilatation, and makes this of sponge in the old conical form, preferring it in general to the laminaria. He says nothing of the tupelo and compressed-wood tents, which are more recent than the time when he wrote his book, or were but little known then. Sponge tents are now preferred by many, of a cylindrical form, or very gradually tapering, and are made antiseptic before introduction by first rubbing with hard soap, and then rolling in salicylic acid. The author anoints his tent with belladonna ointment, gr. xv to 5j; and after introduction, puts two spoonfuls of glycerine in the vagina, and then plugs the passage with cotton to keep the tent in place. We think him hardly explicit enough in regard to the dangers of this mode of dilatation, or in using emollient injections after the tent is removed, as it is well known, that either may in some cases prove fatal; and a second tent is believed to be much more dangerous than the first, particularly if the first is one of sponge, removing the epithelium by its withdrawal.

The author is a decided advocate of leeching the cervix, in certain hyperæmic and inflammatory affections of the uterus and its appendages, and gives very careful directions as to the time and manner of, and indications for their application, so that beneficial and not harmful results may be made to follow their use. He is also in favour of bleeding from the arm as a revulsive in certain cases of metrorrhagia, amenorrhœa, vicarious menstruation, and conditions leading to congestion of other organs, as of the lungs. Hydropathy is also a favourite of his, which he characterizes as "one of the most powerful means in the treatment of uterine diseases."

He recommends that great care should be used in its application, as "it is often employed blindly, and may be injurious, for it is a two-edged instrument."

The portion of the work upon medicinal baths and waters is quite complete, but is chiefly of interest to Europeans, or those contemplating a visit abroad; quite a large number of springs are mentioned as of service for different conditions.

Of preparations of gold he remarks:—

"They are especially useful in cases of scrofulous diathesis. I have used them with great success for several years; under their influence I have seen three ovarian cysts disappear, and the development of two others arrested. Chloride of gold and sodium is given by rubbing it into the tongue beginning with gr.  $\frac{1}{2}$ , and gradually increasing the dose by an addition of gr.  $\frac{1}{10}$  every ten days, until gr.  $\frac{1}{6}$  is taken; or it may be given in solution or in pills, from gr.  $\frac{1}{6}$  to gr.  $\frac{4}{6}$  daily."

The author, after a long experience, favours the application of the actual cautery to the cervix in certain diseased conditions; using it by ignipuncture, scarification, excision; and direct destruction in mass by pressure upon the morbid part. He gives particular precautionary directions as to the proper time for applying the agent, and the subsequent treatment to prevent inflammatory sequelæ; and says, "thanks to these precautions, I have never seen any accident follow the numerous cauterizations I have performed, but on the contrary they have always produced good results." This part of the volume is fully illustrated with the appliances to be used in this form of treatment. He remarks upon their immediate effect, "It is certain that the red-hot iron does not produce so deep a sear as one would think, nor as that caused by the chloride of zinc, the rapid drying of the surface prevents the action of the fire from extending, so that the tissues underneath are modified rather than destroyed." Cauterization is contra-indicated by the existence of inflammation, especially where it is peri-uterine; and every precaution should be taken to determine its non-existence prior to using the application, as otherwise suppuration of the uterus and its appendages may follow, and result fatally.

*Intra-uterine injections*, so often and almost universally condemned, are also advocated by Prof. Courty. He says they "must be ranged among the most energetic means of modifying the tissues, but also the most dangerous that can be employed" if not practised with the most careful precautions, and by means of suitable appliances, such as he recommends and exhibits. He also favours the *introduction of nitrate of silver into the uterus*, in the form of a fragment, powder, or ointment, according to circumstances, for the cure of obstinate and chronic leucorrhœa. He admits that the plan of treatment is heroic, but claims that it is much less dangerous in practice than it would appear theoretically to be. This is explained as follows:—

"The presence of the crayon causes hypersecretion of mucus, which protects the membrane, the crayon being enveloped with the mucus which coagulates around it from the first; afterward it is only through this envelope that an exchange can be effected between the caustic and the secretions of the uterine cavity."

In our country, the curette and chromic acid have largely taken the place of the nitrate of silver in treating the uterine cavity. Remedies which require very extreme caution in use, may be dangerous to recommend to the general practitioner, a fact that no one is better aware of than

Prof. Courty himself; hence the carefulness with which he instructs the reader as to the necessary precautionary measures.

In the *treatment of uterine flexures*, the author has for thirty years employed cauterization high up in the cervix, as well as the vagino-uterine *cul-de-sac* on the side opposite to the deviation; remarking that this plan had been so successful that he had not feared to repeat it several times in the same case. In his opinion "deep cauterization of the cervix on a level with the *cul-de-sac* of the side opposite the flexion is especially useful in flexion of the cervix, less so in that of the isthmus, and still less in that of the body."

Prof. Courty has devised a method for reducing uterine inversion, by making counter-pressure with two fingers inserted in the rectum. Where the organ cannot be reduced, he removes the body of the uterus by ligation with an elastic tube, tightened gradually each day, first burning a groove in the location for the ligature, by means of the actual or galvanocautery. The removal is thus accomplished in from twelve to eighteen days.

The author remarks:—

"*Ulceration of the cervix* is one of the most common diseases of the uterus, in spite of what has been said by Robert Lee, whose statistics are opposed to those of West. I may say that my own experience has confirmed the results arrived at by West, and has justified the opinion that ulceration of the cervix is a morbid condition of great importance in uterine pathology." . . . "According to my experience there were 425 cases of ulceration out of 1563 uterine diseases" (page 638).

*Epithelioma of the Cervix.*—The author opposes the use of caustics as inadequate in their effects, and prefers amputation of the cervix by the *écraseur*. He has invented a pair of forceps with separable blades, for the purpose of securing the cervix, and avoiding the danger of including in the chain any portion of the vaginal wall; he also operates with the actual cautery, protecting the vagina by means of univalve box-wood specula of the Sims pattern.

The article upon extra-uterine pregnancy is scarcely up to the times. So much has been attempted in this condition during the past few years, that we ought to understand by this time what should be done or not done in the various stages and conditions of tubal and abdominal pregnancy. Electro-magnetism has thus far been the most safe and successful foeticide in early tubal cases. Extirpation has not proved successful in the early stages of development. Laparotomy is usually performed in the linea alba, and not over the foetal head, as he recommends. When the operation has been performed during the life of the foetus, it has usually proved fatal, sooner or later, to the mother. When the foetus has been dead a few weeks or more, the operation has frequently resulted favourably. The placenta is not to be disturbed in its attachments, and the cyst is to be stitched to the abdominal wall in closing the wound. It is far from safe for a woman to carry a dead foetus in her abdominal cavity; it is better to remove it before decomposition can set in and endanger her life by septic poisoning. The experience of Dr. T. G. Thomas, of New York, in a number of cases, shows that the operation may be made one of moderate danger.

*The Porro-Cæsarean Operation.*—Prof. Courty gives 33 cases, with 18 recoveries, which is a much more favourable proportion than the present record shows. Of the first 33 cases in chronological order, 19 died



and 14 recovered; with 27 children delivered alive. Of 96 operations thus far, 52 have been fatal. Of the children delivered alive, a large proportion have died within a few weeks or months. Many of such children are illegitimate; are sent to foundling hospitals, and there die in early infancy.

We regret that we cannot commend the illustrations and press-work of the English translation of Prof. Courty's book, as much as we can its material, and the type and cuts of the original work in French. Aside from these imperfections, the book is of very great practical value, and no one will regret having purchased it for his library. Its author has had a large and varied experience, and enjoys the reputation of having been usually successful in the treatment of his cases, many of which are attracted to him from distant places, and go to Montpellier after having been already treated at home. Prof. Courty is ingenious in contriving surgical instruments and appliances; skilful in the use of them; and cautious in his treatment before and after operating. His book teaches the reader in clearly expressed language how to imitate him in his operations and successes; it is certainly one of the best gynaecological treatises now offered to the profession.

R. P. H.

Art. XXXII.—*A Manual of the Diseases of the Eye*. Fourth Edition.

By C. MACNAMARA, F.R.C.S. Surgeon to the Royal Westminster Ophthalmic Hospital; Surgeon and Lecturer on Surgery, Westminster Hospital; Surgeon-Major H. M. Indian Medical Service. 8vo. pp. 520. P. Blackiston, Son & Co., Phila. 1882.

MACNAMARA on the Eye is a familiar old acquaintance, and needs no introduction to the profession. It is something more than a manual and not much less than a text book; though the author tells us that his endeavour has been "to describe the practice carried on in a large ophthalmic hospital rather than to discuss the views of various authorities on ophthalmology," and consequently many statements are taken, at second hand, without reference to the literature of the subject. It is noticeable that a large proportion of the few references made are not of recent date, and have been retained from previous editions. The work is eminently practical and particularly adapted to the needs of the general practitioner, who does not care to be burdened with special bibliography; but extreme brevity in this matter has its disadvantages. For instance, the reader is left to suppose that Mr. Carter is the author of the current theory of hypermetropic strabismus, that Snellen introduced Dr. John Green's astigmatic test, and that "Cowell's test types" are something different from Snellen's.

The author has had an extensive experience both in India and England, and has long been a frequently quoted authority on the description and treatment of the more strictly surgical diseases of the eye, and this is still the strong point of the "Manual." Mr. G. L. Johnson has contributed an excellent chapter on the Anatomy of the Eye, in which will be found good descriptions of the capsule of Tenon, Fontana's spaces, Schlemm's canal, the sheaths of the optic nerve, and other points of surgical and pathological interest. The subject of cataract is quite fully discussed, and the various operations are described at some length. The author acquiesces in the gen-

eral preference for the Gräfe extraction, except that he considers extraction of the lens in its capsule applicable to an unusually large class of cases. Etherization is strongly recommended. He describes zonular cataract as situated between the posterior capsule and the nucleus; it is usually located in front of the nucleus or as inclosing it on both sides. In describing the form of central cataract attributed to ulceration of the cornea in infancy ("pyramidal") the old view is given—"in instances of purulent conjunctivitis among infants, the cornea may ulcerate, the lens is forced against the ulcer, neoplastic formations form on its capsule, then the ulcer heals, and the lens returning to its normal position retains the opaque formation it received when in contact with the cornea"—but microscopical examination has shown that in these cases the opacity is within the capsule, in the superficial cortical substance of the lens, and, if due to the corneal ulcer at all, must be the result of a disturbance of the nutrition of this part of the lens by contact of the capsule with the ulcer.

The part of the book that deals with optical questions is, perhaps, the least satisfactory. A singular mistake is made in describing the effect of a prism placed before the eye, and the fusing of the subsequent double images by a corrective squint.

"If a prism be held with its base inwards, before either eye, rays passing through it will be refracted towards its base, and, falling on the retina, will form an image internal to the macula lutea, which being projected, as in fig. 62, in the direction E, direct diplopia will be the result. But the other eye will immediately and unconsciously endeavour to correct this, and by an involuntary motion it will turn inwards (become inverted), so that the rays of light from the object under observation may fall upon a corresponding part of its retina, *internal to the macula lutea*, and thus correct the diplopia."

As the portion of the retina internal to the macula in one eye corresponds, in binocular vision, to the portion external to it in the other, this inversion would only increase the distance between the images. In point of fact, the images are fused by an external squint of the eye before which the prism is held; if the other takes any part in the act it must also diverge.

Mr. Macnamara gives some interesting points from his Indian experience which will probably not be met with in any other work. He says that an advanced case of leprosy is rarely met with in which plastic iritis is not present, and that leprosy tubers form on the iris, as they do upon the cornea and conjunctiva. Leprous patients often become blind from the growth of leprosy elements in the tissues of both corneas. He describes a class of cases as not at all uncommon in India, and depending apparently on miasmatic influences, in which there is œdema of the optic papilla, accompanied by paralysis and other cerebral symptoms pointing to serous effusion into the optic thalami and corpora striata; optic neuritis does not usually result from the œdema of the papilla, and there is but slight impairment of reflex action in connection with the paralysis. Vision is seriously impaired or may even be completely suspended, but the prognosis is favourable. A case is described in illustration, in which "the condition of the optic papillæ, and the history of the case, lead us to conclude that the loss of voluntary power over the affected limbs depended upon a similar cause to that which induced the loss of power in the retina, and hence to arrive at the conclusion above indicated as to the seat of the effusion in the brain, and from thence into the sheath of the optic nerve and papilla." A "malarial neuroretinitis" is also described, and a high degree of retinal hyperæmia is said to be common in cases of malarial fever.

The author's experience is against the importance of consanguinity as a cause of retinitis pigmentosa, as he has found the disease not uncommon in India where the natives are "scrupulous in observing the restrictions they place upon the intermarriage of relatives."

The print is good and the plates well executed. This edition of the manual is a valuable contribution to practical ophthalmology and will no doubt maintain the popularity of its three predecessors. G. C. H.

ART. XXXIII.—*Anatomical Technology as applied to the Domestic Cat. An Introduction to Human, Veterinary, and Comparative Anatomy, with illustrations.* By BURT G. WILDER, M.S., Prof. Comp. Anat., etc., Cornell Univ., and SIMON H. GAGE, Asst. Prof. Physiology, Cornell Univ. A. S. Barnes & Co., New York and Chicago, 1882. Pp. 575, 130 figs.

PROFS. WILDER and GAGE have prepared for the use of those beginning anatomical studies a manual and laboratory guide, which at once expresses the needs of the students, as these needs have been determined by the experience of their teachers, in all the numerous topics pertaining to class-room and laboratory instruction. The title assumed would at first sight give the impression that the work was devoted to the art of dissection and the preservation of anatomical preparations. The book, it is true, includes all that is required on these topics. But, in addition, it explains and amplifies anatomical nomenclature, describes elaborately the anatomy of the anterior extremity, the viscera, and the central nervous system of the domestic cat, and is enriched with systematic reference to the labours of other anatomists, on the entire range of anatomical and zoological study of the vertebrata.

To conceive and successfully carry out a plan so elaborate requires unusual qualification. Prof. Wilder, the senior of the two authors, has been for many years Professor of Comparative Anatomy in Cornell University, and has given special attention to the education of young men intending to pursue medical studies. This education is one of great importance in connection with the subject of reform in the training of physicians, and the authors can justly claim a respectful hearing upon the problem as to the best way to begin and to conduct a course of instruction preparatory to the anatomical work of the medical schools. Their views, in brief, are as follows: The student must be taught to be cleanly, to be methodical, to keep notes, to use bibliography. He must prepare the bones and dissect the muscles, viscera, bloodvessels, and nerves of an animal belonging to the same class with man (the domestic cat is here taken because it is cheap), not once only, but repeatedly, until he has mastered the art of dissection, and the methods of the scientist. After such training it is claimed that he can master the details of the study of human anatomy with relative ease. Any one who is familiar with the manner in which practical human anatomy is taught in our colleges will note the painful contrast existing between it and Drs. Wilder's and Gage's method. The only point of technic the medical student is taught

is how to use his knife and forceps in dissection. He is given no instruction on the art of exploring viscera, gland ducts, the method of taking out the brain or spinal cord, the preservation of anatomical specimens, or the thousand and one things that he needs in making an autopsy or in preserving specimens. Judging from the condition in which specimens are often presented for inspection at our medical societies, it is evident that not one physician in a hundred knows the use of alcohol as a preservative. Pultaceous brains, distorted and discoloured hearts, macerated fœtuses, greasy bones, attest either to great ignorance or great carelessness on the part of the collectors. It is perhaps not going too far to assert that for lack of proper instruction at a time when habits are formed, fully one-half of the pathological and other specimens obtained, often at great risk and under the stimulus of honourable zeal, are lost both to their owners and to science by want of a proper method employed in their preservation. Drs. Wilder and Gage have written a work which gives directions with such conscientious attention to detail as to make success a certainty. Every medical student and practitioner should read these.

The book is furnished with 130 figures, mostly in illustration of the anatomy of the domestic cat. Nothing can be gainsaid on the selection of this animal, for it is certainly the most manageable and available of any of the larger mammals. At the same time we cannot avoid the reflection that the cat is, with a single exception, the most highly specialized of any of the carnivora. The number of toes, the disposition of the teeth and of the facial bones, the degree of fusion existing in its muscles, are such as to make a comparison instituted between them and the same parts in human anatomy, less easy than with the raccoon, or, indeed, with any of our wild animals of the flesh-eating type, other than examples from the group to which the cat belongs. It is evident, however, for practical purposes, the cat is the only available form, in the absence of the human subject itself, that can be generally recommended.

The work possesses some novel and curious features, which will receive various degrees of welcome. The new and sometimes harsh terms that the authors have employed in description, while doubtless tending to simplify the subject of anatomical nomenclature, have a rather odd appearance, and will be viewed askance by students and writers whose habits have become fixed.

According to this manual, body becomes *soma*; joint becomes *arthron*; median line of the dorsum becomes *dorsimeson*; a direction inward is *entad*, one outward is *etad*, one toward the tail is *caudad*, one toward the head becomes *cephalad*; the position of the body on the side is *latericumbent*, etc. The following are examples of the style resultant upon the introduction of the new terms: "Posture, latericumbent, the venter toward the dissector. Secure the arm caudiducted." . . . "The ventro-caudal border will appear as a slightly raised line nearly parallel with the presterno-vertebral margin and the skin. Lift the border near its middle and trace it mesad, noting that about 1 cm. from the meson, the muscular fibres are replaced by a thin tendon," etc.

Any rational attempt at an improved nomenclature will be welcomed by teachers, but as the proof of the pudding is in the eating, so the test of the system here proposed must be left to the judgment of the teachers and pupils who essay it. This much can be said, that it appears to have been satisfactory at Cornell University. To the advanced student it is an easy task to become familiar with the "little language," and if it prove

unacceptable, he can readily paraphrase into the dear old incongruities that have served the purposes of anatomists for so long a time.

We cannot but think that the authors have produced a valuable manual at once authoritative in statement and admirable in method, and one that is deserving of a welcome at the hands of every student, either in human or comparative anatomy.

H. A.

ART. XXXIV.—*Hydramnios—Contribuzione allo studio dell'eziologia dell'hydramnios e della patologia della placenta.*

*A contribution to the study of the etiology of hydramnios and of the pathology of the placenta*, by Dr. G. B. NICOLINI, First Assistant of the Obstetric Clinic of the Royal University of Pavia, Italy. (*Annali Universali di Med. e Chirurg.* July, 1882, pp. 20.)

AMONG the few Italians who have successfully performed the Porro-Cæsarean section, stands the first assistant of Prof. Porro, Dr. Giovanni Battista Nicolini, who operated in a private house in Pavia, on June 22, 1881, and saved both mother and child. We are now to present in abstract his report of a case of disease of the placenta; to the mechanical effect of which he attributed the existence of a hydramnios, and indirectly a miscarriage.

The subject of the report was a married 8-para of 33 years of age, who entered the obstetric clinic of Pavia, on May 11, 1882, in labour, and pregnant about seven months. She menstruated for the first time when 17 years old; was always regular, and in good health; her eight children were all born at term, and naturally, except the fifth, which presented by the shoulder and was turned, and delivered by the feet. All of the children were born alive and in good condition; and she nursed them from 12 to 19 months each.

In the ninth pregnancy now to be considered, the patient felt as usual until the commencement of the fifth month, when there was a sudden increase of volume in the abdomen, accompanied by a sense of weight in the pelvis and dull pains in the uterus. Thenceforward the abdomen continued to enlarge; soon the lower extremities became œdematous, and a little later, the respiration was embarrassed. The first foetal movements were recognized at the end of February, and from this time, they were more marked than in any prior gestation, and in various regions of the uterus. At the time of her admission, she was obliged to assume a half-sitting position in bed, on account of her dyspnoea. She was of robust build, with a well-developed frame, and above medium height. The first sound of her heart was slightly blowing, and there were rattling sounds in the lungs. Her abdomen was globose, and larger than it should have been at term, with a fully developed fœtus. Circumference at the umbilicus 50 inches, and length from the pubes to the ensiform cartilage 15½ inches. Her lower extremities were enormously œdematous: urine not albuminous.

By means of a Wenzel puncturing syringe, more than six quarts of citron-coloured amniotic fluid were drawn off. The fœtus presented by the vertex was alive, but died before the labour was completed, which

occupied  $2\frac{1}{4}$  hours after the aspiration. The fœtus was  $17\frac{1}{4}$  inches long, and weighed about  $3\frac{3}{4}$  pounds. The placenta was irregularly circular and very large, measuring  $9\frac{7}{8}$  by 9 inches. The cord was  $14\frac{1}{4}$  inches long, and centrally attached. On the fœtal face of the placenta at the point of insertion of the funis was a tumour, covered with a reflexion of the amnion, which measured  $9\frac{7}{8}$  ( $25$  ctm.) inches in circumference, and  $2\frac{1}{8}$  ( $5\frac{1}{2}$  ctm.) in thickness. It was of a cordiform shape, and resembled somewhat in appearance the tissue of the kidney. The uterine face of the placenta had a normal character, except at a point opposite the tumour, where it was yellowish, and decidedly thinned, presenting the evidences of fatty degeneration and atrophy from compression. The woman recovered, and went home in ten days.

Dr. Nicolini attributes this hydramnios to the "compression of the large ramifications of the umbilical vein, and to the obstruction in the placental circulation, produced by the neoplasm." The defective nutrition of the fœtus and its final death, he believes due to the same mechanical pressure.

The tumour consisted of two parts: the first of an involucre; the second of a substance proper, which composed the bulk of the mass. It was essentially of connective tissue in character, and probably had its origin in some inflammatory process.

Hydramnios is believed to owe its existence to a variety of causes and to be due to disease in the mother, the fœtus, or the placenta. It is most common in multipara; and in the cases reported, the sex of the fœtus has been most frequently female. In the majority of cases the cause may be attributed to some mechanical obstacle in the circulation of the placenta or umbilical vessels. In a case reported by Küstner, this was due to hepatic disease in the fœtus. The decidua tissues are subject to inflammatory changes which result in an abnormally large amniotic secretion. The fœtus appears to undergo a process of starving, becomes atrophied, and in many cases dies. But there are marked exceptions to this, as the Nova Scotia giantess is said in her second labour to have voided six gallons of liquor amnii, although her fœtus weighed  $23\frac{3}{4}$  pounds and was 30 inches in length. Where the disease has occurred in a case of twin pregnancy, it is usual to find but one ovum affected, which tends to strengthen the theory that the affection is purely local and mechanical, as some maintain.

R. P. H.

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ART. XXXV.—*Legal Medicine*. Part I. By CHARLES MEYMOTT TIDY, M.B., F.C.S., Master of Surgery, Professor of Chemistry and Forensic Medicine and Public Health at the London Hospital, etc. Royal 8vo. pp. 636. London: Smith, Elder & Co., 1882.

THIS is decidedly the most imposing treatise on Legal Medicine that has been issued from the press since the publication of Professor Casper's celebrated work on "Forensic Medicine," in four volumes, which was translated for the Sydenham Society in the year 1862.

It argues well for the increasing interest in this department of science, especially in the medical profession, that there should be an increasing demand for books of such a high character as the one before us, which

comprises but the first of six distinct parts,—the others to follow as rapidly as possible, and each part constituting a large royal 8vo. of over six hundred pages. Certainly, the time has gone by when students of either medicine or law can afford to dispense with the knowledge of forensic medicine, so inseparably does it seem to be connected with both these studies. It would truly be a work of supererogation to undertake here to discuss its importance to the law student, inasmuch as it constitutes the very foundation of the whole fabric of criminal law; yet, singular to say, the Law Department of one of the oldest universities of this country does not, up to the present time, exact from its students a knowledge of medical jurisprudence, as essential to their graduation! We may trust that the time is not far distant when this subject will be viewed by the proper authorities in a clearer light, and with a higher appreciation of this most essential branch of a legal education. As regards the sister profession of medicine, it must also be admitted that, in our country, only the very slightest attention has hitherto been bestowed upon medical jurisprudence. A few of our medical schools publish it among the other branches taught in their courses, but in point of fact, it is either entirely ignored in their lectures, or else is perhaps done up in half a dozen lectures, so as practically to amount to nothing to the student. Now, when it is remembered that very frequently the medical practitioner is called upon to act in cases demanding this very knowledge—cases often involving the question of life and death—it seems really marvellous that in this age of medical progress, so slight a degree of attention has hitherto been bestowed upon this department of science.

The volume before us is evidently the result of much careful and elaborate research. Its author has for some years been a public health officer, and is also a recognized teacher of legal medicine. He is already favourably known as one of the authors of "Woodman and Tidy's Forensic Medicine and Toxicology," issued in this country in 1877, and which has enjoyed a deserved popularity, both here and in Europe. He handles his subject with the skill and tact of an expert. He informs us in his preface that in seeking to clear up what was ambiguous, and to reconcile what was contradictory, "he found it necessary to institute new inquiries and conduct fresh experiments in most of the subjects." How far he has conscientiously fulfilled this task, the attentive reader will not fail to discover, as he follows the author in his successive details. As he very forcibly observes: "For the medical jurist, whose object should be the interests of justice, to hesitate where science is positive, is as unjustifiable as for him to speak without reserve on those details of our science where the limits of exact scientific knowledge are undefined."

We shall now proceed to notice some of the subjects discussed in the present number.

Chapter I. treats of certain general principles of acknowledged importance, and which are familiar to the medical jurist, such as the Process of Law, including the Coroner's Inquest; the Grand and Petty Juries; Medical Evidence, including Expert Testimony; the Witness-box; and the Preparation for giving Evidence. All this is given in good plain English, and in a thoroughly practical manner for the student to make use of. We would particularly notice the timely remarks on *the quoting of authorities in the witness-box*, and also on *medical secrets*. As regards the latter subject, it may not perhaps be known generally to physicians, that the law of England and also of the United States (with one or

two exceptions in the latter) has decided that the medical man enjoys no special privilege with regard to secrets of a professional nature; in other words, that "no practitioner can claim exemption from answering a question because the answer might involve a violation of seeresy, or even implicate the character of his patient." Now, although this is the law, we entirely coincide with the author in the opinion that it is not good law. It seems a monstrous violation of right and propriety that "secrets affecting the honour of families, and perhaps confided to the medical examiner in a moment of weakness, should be dragged into the garish light of a law court, there to be diseussed and made joke of by rude tongues and unsympathetic hearts." No; except in very extreme cases, as when the question of life and death is concerned, we deem that all such professional secrets, unless of very trivial importance, should be held as inviolable as are the secrets of the confessional. We are glad to say that in one of our States, that of New York, it has been decided that "no person duly authorized to practise physie or surgery shall be allowed or compelled to disclose any information which he may have acquired in attending any patient in his professional character, and which information was necessary to enable him to prescribe for such patient as a physician, or to do any act for him as a surgeon."

Chapter II. discusses very fully the important subject of the "Signs of Death." We particularly notice the judicious remarks on *molecular* and *somatic* death; and also on *premature burials*. In relation to the latter, the author quotes Prof. Nussbanm, of Munich, as stating (1881) that "he believes many to have been buried during the war (Franco-German) that were not really dead, but merely suffering from an extreme lethargy arising from loss of blood, exhaustion, hunger, cold, and fear." We would be sorry to have to endorse this opinion in relation to premature interments, as applicable to our own country. The instinctive horror, everywhere prevalent, of being *buried alive* has, no doubt, led to exaggeration in this matter; nevertheless, it affords an additional argument in favor of acquiring a thorough knowledge of the *signs of death*. Among the "signs" of ordinary death a due prominence is given to such as are generally admitted by the legal physician as being good and sufficient to establish the fact,—such as (1) the absolute and continuous cessation of the functions of *circulation* and *respiration*. In regard to the former of these functions, while it must be admitted that the continued cessation of the heart's action should be received as good evidence of the cessation of life, the converse of the proposition does not always hold good, since well-authenticated cases are related where the heart continued to pulsate sometime after the evident stoppage of somatic life. Thus, Duval records having seen the heart of a criminal beat for fifteen minutes after decapitation, the left auricle, pulsating more or less for an hour. This phenomenon is still better observed, as is well known, in some of the lower orders of animals, notably in the turtle and shark. But in the case of the human embryo, expelled in its membranes, even as early as the fourth month of gestation, the pulsations of the heart have been distinctly noticed. This latter fact has an important medico-legal bearing in cases involving the question of *tenancy by courtesy*, where the whole question of a husband's right to a life interest in a deceased wife's property is made to hinge on the proof of the birth of a *living* child of the deceased. In such a case, we hold that the pulsation of the heart, at or after birth, no matter for how short a time, in a fœtus whether mature or immature, con-



stitutes good legal, as well as physiological proof of a *live birth*; and it has been so affirmed by one of the Delaware courts some few years since, in a case of this nature, in which we ourselves were concerned as an expert witness. (2) Changes in and about the eyes. (3) The progressive cooling of the body. Under this head, only a very slight allusion is made to the interesting fact of the occasional rise of temperature in the body after death, or *post-mortem caloricity*, as it has been named. This subject has been particularly noticed by Dr. Dowler, of New Orleans, and also by several European observers. (4) The condition of the muscles, and *rigor mortis*. Under this head very proper allusion is made to what may be termed *cadaveric spasm*, or the rigid attitude and expression frequently observed as being instantaneously assumed by a corpse, in certain cases of violent death. This subject has been very clearly discussed by our townsman, Dr. John Brinton (*Am. Jour. Med. Sci.*, Jan. 1870); also by Dr. Ogston (*Lancet*, Sept. 3, 1870). (5) Cadaveric ecchymoses (Suggillation; Lividities). (6) Putrefaction. (7) Formation of Adipocere. (8) Mummification.

In Chapter III. the interesting subject of "Personal Identity," both of the living and the dead, receives the due meed of attention. It is, moreover, one of the greatest medico-legal importance; and as discussed by the author, and, indeed, through its own intrinsic merits, its study is invested almost with the attractiveness of a romance. One might suppose that the personal identification of the living could never be a matter of very great difficulty; but the perplexities encountered in the late notorious Tichborne case, as well as in many others of a like character, prove the fallacy of such an opinion. When the identification of the *dead* becomes the subject of medico-legal investigation, the very highest skill and scientific knowledge may be demanded in order to unravel the mystery, and shed such light upon the case as may result in, perhaps, saving an innocent suspect, or in fastening guilt upon the real culprit. Under this head, the author enters upon a wide field of discussion. The principal subjects noticed are the identification of mutilated human remains; age; sex; stature; race; cicatrices; tattoo-marks; and deformities,—these all affording valuable signs or indications towards personal identity. In this chapter, also, some very practical hints are given as to the medico-legal importance of a close observance of marks left by the hands and feet in certain criminal cases; also of the proper method of detecting hairs and fibres; more especially in cases of death by homicidal violence. Some striking instances are related where the discovery of one or two hairs, or of a few fibres of cotton, linen, or wool, adhering to a weapon, has been the means of leading to the identification of the real murderer.

The subject of blood stains and seminal stains is likewise treated of in this chapter, both of them in sufficient detail. The examination of blood stains comprises their *chemical*, *microscopical* and *spectroscopic* analysis; the latter one being, in the author's opinion, "infinitely the most delicate and the most important." He does not appear to accord a very prominent place to the *guaiacum-test* of Dr. Day, of Australia, and one so highly praised by the late Professor Taylor, of London. He seems to argue that it is not quite reliable, because guaiacum resin is blued by a variety of other substances besides blood; but, at the same time, he appears to forget that the gist of the guaiacum-test is not that it imparts a blue colour to blood when used *alone*, but only when applied in connection with ozonized ether (peroxide of hydrogen); whereas, the other bodies give the blue re-

action with the guaicum *by itself*. We have always been disposed to rely very confidently upon the guaiacum-test, *when properly employed*, as a most satisfactory chemical evidence of blood stains.

Under the *microscopic* test for blood stains, the possibility of identifying *human* blood deservedly demands notice. The conclusion of the author is, that "it is better, in the present state of science, at once to confess our inability to give a definite reply." He then alludes to the experiments and important conclusions of our townsman, Professor J. G. Richardson; but hesitates, we think, to award him his due meed of commendation, while speaking of his "most ambitious attempt in this direction," as being "of a scientific, rather than of practical importance." Just here we must beg to differ from our learned author: it is especially on account of their *practical*, medico-legal importance that we regard Prof. Richardson's results as of very great value. True, as Dr. R. himself fully admits, we are not yet able to discriminate microscopically, or otherwise, between a human blood stain and that of the dog, monkey, rabbit, and other animals whose corpuscles measure more than  $\frac{1}{4000}$ th of an inch diameter; but we submit that, if his method will enable us (as it undoubtedly does, and as we ourselves have verified) to distinguish human blood from that of our common domestic animals, such as the horse, ox, pig, and sheep (with which it is most likely to be confounded), it ought to be received as a most important and valuable aid in all medico-legal examinations of blood stains in criminal trials. In the last American edition of Prof. Alfred Taylor's work on *Medical Jurisprudence* (1881), we notice that this lamented author, after a considerable previous reticence upon this subject, very frankly acknowledges the justness of Dr. Richardson's claims.

As regards the *spectroscopic* test, the author considers it by far the most delicate and reliable of all. He very fully and practically describes this mode of experimenting. There can be no doubt that in the hands of the trained expert it proves a most important adjunct to the other tests; but in a criminal case, especially in a capital one, we should not feel disposed to rely exclusively upon this single test; and for the same reason that, in a poison case, we should be unwilling to stake the result upon any one single chemical reaction.

The examination of *seminal stains* is, of course, chiefly important in connection with cases of alleged rape, when these become the subjects of medico-legal investigation. All the usual tests necessary for proving their identity, including the microscopic evidence of the presence of the spermatozoa, are dwelt upon by the author. We again fully coincide with his opinion that, although according to Prof. Casper, semen may be found without spermatozoa, we are not justified, in a criminal case, in asserting that a suspected stain is really seminal unless we are able to detect them. In this chapter also the author treats of certain interesting questions relating to the *limit of vision* and of *sound*, as regards its velocity and intensity. It is obvious that all these questions may have important medico-legal bearings in certain criminal cases, especially of homicide; and accordingly they receive proper attention in the present treatise.

The remaining chapters of the volume relate to the various practical subjects embraced under the heads of the Causes of Death; the Post-mortem Examination; Sex; Monstrosities; Hermaphroditism; Expectation of Life (under which the various questions relating to *life insurance* are properly discussed); Survivorship; Heat and Cold, Lightning, Burns

and Scalds, as causes of death, with the proper methods of diagnosis in criminal cases.

Under the section on Combustibles and Explosives, in their medico-legal relations, the subject of *spontaneous combustion* receives a due consideration. Whilst it is admitted by all that many organic substances may undergo spontaneous combustion under favourable conditions, and may thus become the subject of legal investigation, under a criminal charge of arson, the far more interesting subject of the *spontaneous combustion of the living human body* also receives a brief consideration, though perhaps quite as extended a one as it deserves. After summing up all the evidence, pro and con, on this point, the author arrives at the conclusion, to which we also feel compelled to assent, that "there is no authentic case of true *spontaneous* combustion of the human body on record;" but that all the alleged so-called instances can be proved to have originated from the accidental contact with fire, in some form or other.

The last chapter of the book treats of Death by Starvation, in its bearings upon medico-legal researches; but it presents nothing demanding special notice at the present time.

From this review the reader will readily gather that we entertain a high opinion of the merits of the work. All the various topics discussed are elucidated in a very clear and satisfactory manner. One of the most useful and practical features of the book is the very copious array of illustrative cases, which is appropriately appended at the close of each chapter, an arrangement which adds not a little to the value and interest of the treatise, and one which must have cost the author no small amount of labour and research. Besides which, there are also a copious index and table of contents. When we further add that the book is beautifully printed in clear, bold type, and on thick substantial paper, there remains nothing further to desire.

We shall anticipate with pleasure the issue of the remaining parts of this work, which, when completed, will constitute a true encyclopedia of Legal Medicine, from its abundant storehouse of valuable material for the medico-legal student.

J. J. R.

ART. XXXVI.—*The Change of Life in Health and Disease. A Clinical Treatise on the Diseases of the Ganglionic Nervous System incidental to Women at the decline of life.* By EDWARD JOHN TILT, M.D., Past President of the Obstetrical Society of London, etc. etc. Fourth edition. 8vo. pp. 184. P. Blakiston, Son & Co. Philadelphia, 1882.

THE reviewer first became acquainted with the writings of Dr. Tilt in 1851, through reading a little manual then published by him, "*on the preservation of the health of women at the critical periods of life.*" This small volume, by a careful attention to the same class of affections, in a much larger number of subjects, has gradually grown to the present very creditable work, which might be entitled the *minor gynecology of the climacteric period*, as it is made up of a vast collection of the diseases and their mode of treatment, which belong to medical rather than surgical science; not any the less important in many instances, but not determined in gravity by dangers incident to the use of the knife, as in many operations upon women, which are to them literally life or death.

This work of Dr. Tilt is of a clinical character, presenting records and observations relating to many cases of an interesting or typical nature, and recommending appropriate treatment such as he has in his own experience found most beneficial. It is divided into twelve chapters, the headings of which we give for the benefit of the reader, that he may understand the nature of the subjects treated, viz: Physiology of the change of life; its general pathology; principles of treatment at the change; principles of hygiene at the change; diseases of the ganglionic nervous system; diseases of the brain at the change; neuralgic affections; diseases of the reproductive organs; of the gastro-intestinal organs; of the skin, and other diseases, not contained in the preceding classification, such as gout, rheumatism, diseases of the lungs, heart, and bloodvessels, etc. There are no less than thirty-five statistical tables covering a variety of subjects, many of which are collected from his own experience. These have enabled the author to materially condense the matter of the volume which is presented in a very compact form, with headings so arranged, that it is an easy matter to glance over the book, find what it contains, and select any subject wanted.

The book is a valuable addition to our collection of works upon the diseases of women, and their medical treatment. It is well printed, and being low in price ought to have an extensive sale, if the merits of the work, and its usefulness as a means of practical instruction, are at all properly estimated by the profession. The reputation of the author ought to be a guarantee, that the book is well worth a place in every medical library. Although upon a special class of cases, the range is such as to reach almost every variety in general practice where women are to be treated.

R. P. H.

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ART. XXXVII.—*Regional Surgery, including Surgical Diagnosis.*  
Part I., *The Head and Neck.* By F. A. SOUTHAM, F.R.C.S. 8vo.  
pp. xvi., 229. London: J. & A. Churchill, 1882.

THIS is the first instalment of three volumes to be devoted to Regional Surgery. The others are to contain respectively the Trunk and Arm, and the Groin and Leg. It will be a useful book, chiefly to the young and inexperienced practitioner in pointing out to him when puzzled what affections are most likely to be met with in the region under consideration, and the peculiarities of each. The man of large experience will hardly seek it at least more than once. It whets the appetite, but it does not feed. It is in other words too elementary and too brief. Many of the subjects treated, of course, need more mention, but in other cases the description of the affection and of the means for making a differential diagnosis are so compressed that justice is not done. None of the delicate refinements of diagnosis can be introduced; there is not room for them.

Of course, Allen's Anatomy has been written with a different object in view; but, of the two books, Allen's will be the more satisfactory and useful. But the ideal book on "Regional Surgery" has yet to be written. The process of evolution has begun; each author adds his mite. The good points survive by incorporation into the next book. After a time the profession may hope to attain its desires.

W. W. K.

ART. XXXVIII.—*Spirillum Fever; Synonyms: Famine or Relapsing Fever*, as seen in Western India by H. VANDYKE CARTER, M.D. Lond., Surgeon-Major I. M. D., etc. London: J. & A. Churchill, 1882, pp. 449.

DR. CARTER is already well known for his researches in various recondite medical subjects. The work issued under the above designation, gives an account of that curious malady—relapsing fever—which is apparently produced by a parasite in the blood—the spirillum. This consists of a “colourless, slender, twisted filament actively moving in the liquid plasma until coagulation begins.” It is not found in any other fluid or tissue of the organism, and its presence in the blood excites the febrile paroxysm; its disappearance marks the interfebrile or intermission stage; its redevelopment is coincident with the relapsing stage.

The spirillum is a vegetable parasite belonging to the *Algæ* class, and is included in a subsection called *Bacteria* which form with *bacillus* a nematogenous group. Dr. Obermeier is the original discoverer of the presence of spirillum in the blood in cases of relapsing fever.

Dr. Carter's valuable researches prove that relapsing fever is the same disease in Bombay as in Europe and, probably, in America. His specimens, examined by Koch and Colin and Albrecht, were found to be identical with those of European countries. The disease although known as “famine fever,” only finds in the low condition of the vital forces, a suitable nidus for the reception and development of the infecting organism. Famine does not produce the disease; famine merely favours its spread. According to Dr. Carter, relapsing fever “spreads solely through means of actual contact with the sick.” It appears also that the contagion is active both before and after the febrile manifestations. It is very remarkable that no immunity against future attacks is conferred by a seizure, no matter how severe it may have been. The mechanics of the contagion—so to speak—remain obscure. It is not known by what channel the materies morbi is conveyed. So direct a medium of communication as between the nursing mother and the child has not seemed to affect the propagation of the germ. Crowding together of people seems to be the most important agency for inducing contagion. There is, it is certain, some means of propagating the spirillum, which remains to be discovered.

The existence of this parasite and the development of a specific fever from it is one of the most important facts in modern parasitic pathology. The work of Dr. Carter is an important contribution to the subject, and we commend its study to those interested in the subject. R. B.

# QUARTERLY SUMMARY

## OF THE

### IMPROVEMENTS AND DISCOVERIES

#### IN THE

## MEDICAL SCIENCES.

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### ANATOMY AND PHYSIOLOGY.

#### *Congenital Absence of the Kidney.*

Dr. TURBIN, of Tiflis, has recorded an example of congenital absence of the left kidney in a prisoner, sixty years old. The ureter on the same side was absent; at the site of its termination in the bladder a diverticulum a few centimetres long existed. The size of the only kidney is not given. The author gathered eight cases from literature; five times the left was wanting, in three the right. To this O. Petersen, from whose abstract in *Deutsche Medicinal Zeitung* this report is taken, says that only once the (left) kidney was wanting in 1500 post-mortem examinations of his own.—*Med. Times and Gaz.*, Oct. 7, 1882.

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#### *The Formation of Fibrin.*

In a recent paper, Dr. A. SCHMIDT (*Arch. de Physiologie*, 1882, p. 513) sums up the more recent researches carried on in his laboratory, in prosecution of his well-known views regarding the coagulation of fibrin. It is hardly necessary to remind our readers that, according to Schmidt, the coagulation of fibrin is due to the action of a ferment which is derived chiefly from leucocytes, but also, in part, from coloured cells. He first puts the question whether the decomposition of leucocytes which gives rise to the fibrin ferment be solely a *post-mortem* phenomenon, or whether it also occurs in the living circulating fluid. To this question, he answers that such decomposition does take place, but to a far smaller degree than in the case of shed blood, and that the ferment, as it is formed, is destroyed in the organism. Finding that the ferment exists nominally in minute quantities, the further questions to be studied relate to its physiological variations in various animals, to the comparison of the quantity found in living blood with that found in dead blood, and to the pathological variations of these quantities in various abnormal conditions, spontaneous or provoked. Since to follow Professor Schmidt throughout the various items of his inquiry would be tedious and useless, the reader is referred to his paper in which the subject is lucidly exposed. We can only recapitulate its salient features, indeed, the paper itself is a *résumé* of results extending over several years, and is well worthy of the attention of physicians as well as of physiologists.

The fibrin ferment which is contained in the living blood of all animals, exists therein in very different quantities in different animals, under different conditions of time, season, and health; these variations of quantity are naturally still greater for shed blood, but not always in the same sense—thus, whereas the living blood of herbivora contains less ferment than that of carnivora, the reverse is the case in the shed blood of these animals. In the blood, whether living or shed, of a fasting animal, the ferment is far less abundant than in that of an animal on full diet. As to season, a high temperature diminishes, a low temperature increases the quantity of ferment. The *post-mortem* ferment is more abundant in arterial than in venous blood, the *ante-mortem* ferment is more abundant in venous than in arterial blood.

In order to determine the possible action of an augmentation of the ferment in the blood, cats and dogs were submitted to injections of "blood-clot extract," in quantities such as would be sufficient to bring about clotting within fifteen minutes, of a volume of plasma equal to the estimated volume of the animal's blood. Such injections were innocuous, and prove that the organism is capable of destroying the ferment, or at any rate of neutralizing its action. It is, however, possible by using a freshly prepared and concentrated extract to cause sudden death by general thrombosis. In other cases, where death did not ensue, there were grave constitutional disturbance, fever, and alteration of the blood.

To examine the ferment in febrile blood, an experimental fever was provoked, viz., septicæmia by the injection of putrid liquids. In those cases in which the disease ended fatally, the *ante-mortem* ferment was greatly increased (10 to 100 fold in calves and sheep; 12 fold in dogs), subsequently diminished, and even subnormal, the *post-mortem* ferment was sometimes increased, sometimes diminished, being usually less as the *ante-mortem* ferment was greatest in amount. The percentage of fibrin decreases in proportion with the severity of the disease, and is at its lowest at the moment of death, whereas it recovers and rises above the normal when the disease takes a favourable course. The physiological reading of these facts, according to Professor Schmidt, is as follows: The decomposing leucocytes give rise to the fibrin ferment, and to a "substratum of coagulation;" this decomposition is in constant progress during life, since the ferment is always present in living blood; by the reaction of the organism, the products of this decomposition are constantly consumed, and the decomposition is compensated for by new leucocytes. An increased amount of ferment in the circulating blood is a sign that the decomposition has passed from a physiological to a pathological degree. The corresponding compensation by new leucocytes increases, but is limited and soon becomes inadequate, the corresponding consumption or disappearance of leucocyte products also increases, and to such a degree that the accumulation of ferment and substratum never reaches a value equivalent to that of leucocyte disintegration, and thus the percentage of fibrin falls as the disintegration increases. And, in effect, Dr. Hoffmann's observations show that the number of leucocytes contained in a given volume of blood drawn from an animal in various states, varied with the quantity of fibrin that can be derived therefrom.

Among many other points of interest, we may mention the effects of the injection of hæmoglobin and of pure water. Such injections—as we know from the observations of Naunyn and Franckel—are most deadly; hæmoglobin greatly favours coagulation, and kills by thrombosis of the great vessels, apparently by provoking the sudden development of fibrin ferment, which appears to be suddenly effaced by the reaction of the organism. It is remarkable, however, that the injection of intact globules, or of solutions of crystals, is innocuous. Thus the effects of a hæmoglobin solution in its active form produce much the

same result as putrid liquids, but with far greater intensity of action; for, whereas, its rapidity in the latter case is measured by hours, in the former it is by minutes. Water acts by dissolving the hæmoglobin from the globules.

The pathological bearings of the above studies are thus summed up: "There are changes of the blood, actual diseases of the blood, when the physiological decomposition of leucocytes reaches an intensity beyond the normal. The products of this decomposition, among them the fibrin ferment, accumulates in the blood, the percentage of fibrin diminishes, the temperature rises, and, as an immediate consequence, the blood is exhausted of white corpuscles. These changes supervene when putrid liquids, or hæmoglobin in solution, are brought into direct contact with the blood; the effect of distilled water is the same, but less violent. Putrid liquids and hæmoglobin, absorbed by the subcutaneous tissue, have a similar tendency, but less marked.—*Brit. Med. Journ.*, Oct. 21, 1882.

#### *Paths of Conduction in the Spinal Cord.*

Dr. WASIL KUSMIN has made a number of experiments as to the path of the fibres in the spinal cord of the dog, and gives the following summary of his results, confirming in the main the results obtained by Woroschiloff, Ott, and R. Meade Smith with the same methods of study.

1. The lateral columns contain the sensory and motor fibres.
2. The anterior columns consist mainly of centrifugal fibres which, after destruction of the lateral columns, are capable of assuming their functions to a certain extent.
3. The posterior columns are largely formed of centripetal fibres.
4. The gray substance contains no continuous path of conduction.
5. The sensory fibres from the lower extremities decussate in the cord.
6. After a hemisection of the spinal cord the motor nerves of the lower extremity preserve their functions as high as the anterior roots of the nerves on the level of the section on the opposite side of the cord.
7. Vaso-constrictor fibres run only in the lateral columns.—*Medizinische Jahrbücher*, 1882, ii. heft.

#### *The Pulmonary Circulation.*

Most medical writers of the present day assume that the pulmonary circulation is under the influence of the vaso-motor nerves. Some physiologists are, however, less assured of the existence of such nerves; and a considerable amount of experimental evidence has been brought forward to prove or to disprove this important point.

For the proof, Badond (*Verh. der Phys. Med. Ges.*, Würzburg, N. F., vol. viii.) had brought forward the fact that the blood-pressure in the pulmonary artery is diminished by section of the medulla, increased by its faradization; Lichtheim (*Die Störungen des Lungen Kreislaufes*, etc., Berlin, 1876), that the pulmonary pressure is increased by dyspnœa when the aorta has been closed, while the carotid shows no increase of systemic pressure.

On the other hand, Zuntz (*Pflüger's Archiv*, Band xvii.) had failed to convince himself of pulmonary vaso-constriction; and Waller (Du Bois-Raymond's *Arch.*, 1878), under Ludwig's guidance, had come to the conclusion that the increase of pulmonary blood-pressure consequent on medullary faradization is only secondary to the constriction of systemic vessels, and independent of any pulmonary vaso-constriction.

Th. Opencowski has methodically examined the whole question, under



Stricker's guidance ("Ueber die Druckverhältnisse im kleinen Kreisläufe," Pflüger's *Archiv*, 1882, p. 233). His experimental discussion appears as satisfactory as the case will admit; the problem being to decide whether the increase of pulmonary blood-pressure by medullary excitation is due to the obstacle of a pulmonary vaso-constriction, or to the expulsion of blood by systemic vaso-constriction, or to the obstacle constituted by an insufficient left heart. To prove the first supposition, it would have been necessary to demonstrate an increased pressure in the pulmonary circuit in the absence of increased pressure in the systemic circuit. Liehtheim attempted this by ligature of the aorta; but the increased pressure consequent on dyspnoea, which he saw, might quite well have been due to systemic vaso-constriction; and, in effect, Openskowski found, under these conditions, that the pulmonary increase never occurred without simultaneous (or, more correctly, antecedent) systemic increase; and that previous section of both splanchnics prevented the increase both in the aortic and in the pulmonary systems. Conversely, he found that excitation of the splanchnics, or merely pressure on the abdomen, raises the blood-pressure in the lower circuit. All these facts argue that the increased pressure in the lesser circuit is passive—a mere engorgement due to the expulsion of blood from the greater circuit. Against the possibility of the pulmonary engorgement being due to the obstacle caused by a congested and inefficiently beating left heart, the author observes that the pressure is much greater in the pulmonary artery than in the left auricle; and that, therefore, the former pressure cannot depend on the latter by any retrograde influence. This observation applies to the dog, on which animal the author's experiments were exclusively made. It shows clearly that the engorgement of the left heart, which in the rabbit is so great as to bring the auricle to a stand-still, is not the essential factor of the increased pressure, since the latter can occur as well without as with that excessive engorgement. The conclusion that can be legitimately drawn from the above experiments is, that an action of vaso-motor nerves (and therewith their existence) in the augmentation of pulmonary pressure by medullary excitation, whether by dyspnoea or by faradization, is not at all proved, but to a great degree disproved; and, until their existence is proved, they must be considered as non-existent.—*Brit. Med. Journ.*, Nov. 11, 1882.

#### *The Fundamental Nervous Plexus of the Uterus.*

M. REIN, of St. Petersburg (*Bulletin de la Société de Biologie*), states that he has specially studied the fundamental plexus of the uterus, because, both physiologically and clinically, an exact knowledge of this plexus is of great importance. His description of the plexus is as follows: 1. The general features of the fundamental plexus of the uterus do not differ from those of other organs composed of non-striated muscles. 2. It is extra-uterine, and is situated principally in the cellular tissue which surrounds the vagina, just where the hypogastric plexus anastomoses with the branches of the sacral nerve. 3. This plexus presents a large number of ganglion-cells. In the plexus of the guinea-pig, these cells constitute more than a hundred ganglia of different dimensions. 4. The ganglia are generally situated on the track of the principal efferent and afferent nerve-bundles of the plexus. There are a certain number of small ganglia also scattered about in the network of the plexus. 5. The hypogastric, sacral, uterine, and vesical ganglia, and also those of the fundamental plexus, can be recognized according to the position they occupy. 6. The uterine ganglionic cells of the guinea-pig and the rabbit are limited above by the horns of the uterus. Inferiorly, the fundamental uterine plexus mixes with the vaginal plexus. None of

the fibres, either of the pneumogastric or of the sacral nerves, pass into the uterus until they have mixed with those of the fundamental plexus.—*London Med. Record*, Oct. 15, 1882.

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*The Movements of the Bowels in Health and Disease.*

Perhaps there is no function of the body which plays a more important part in various morbid conditions of the abdominal viscera than the movements of the bowel; and certainly there is none which, in its pathological relations, has received less experimental study. Uncertain inference from clinical symptoms is almost all that physicians have had to depend upon in their diagnosis, and in their endeavour to alter by treatment that which they assume to be present. As an instance, we may adduce the difference of opinion which has existed and still exists among distinguished authorities on the question whether there ever is, in morbid states of the bowels, what has been miscalled an antiperistaltic action—a question of great importance in many acute disorders.

Thanks to the well-directed energy of NOTHNAGEL, and so far as animals can furnish it, we have now some definite knowledge. He has made a series of experiments to ascertain by actual observation what modifications the intestinal movements undergo in morbid states. The experiments (described in the *Deutsche Zeitschrift f. klin. Med.*) involved no suffering to the animals concerned. All were kept insensible by ether—dogs and cats by inhalation, rabbits by subcutaneous injection; and all were killed by division of the medulla oblongata as soon as the experiment was over, and before the return of consciousness. The method employed was that of Sanders and van Braam Houckgeest, of keeping the animal, with abdomen opened, immersed, with the exception of the head, in a one-half per cent. saline solution, at a uniform temperature of 100.2° F. Under these circumstances, as the originators of the method pointed out, rest is the rule in most parts of the bowel, with the exception of the duodenum. Now and then, at rare intervals, there is a gentle peristaltic movement in the small intestine, and local irritation causes only a local effect, without producing any trace of general peristalsis. But the condition is changed at once by the presence of a quantity of gas and liquid distending part of the bowel. This is immediately moved forwards by a stormy peristalsis, a circular contraction behind it pushing the distended portion onwards to the cæcum. Sometimes, however, the movement suddenly stops, to go on again after a brief pause. It is distinctly analogous to the sudden temporary cessation of griping pain which is familiar to most people. Nothnagel can discover no cause for it, except a sudden inhibitory nervous influence, which its aspect indeed suggests.

As regards the first fundamental question—the occurrence of antiperistalsis—Nothnagel entirely corroborates the statement of Engelmann, that the intestinal contractions may take place either upwards or downwards. But the last-named observer, experimenting with the intestine exposed to the air, was in error in assuming that peristaltic action, upwards or downwards, was set up by any local irritant. When the bowel is preserved from the air by the saline solution, local irritation causes a local constriction, if the bowel was previously at rest. Moreover, Nothnagel concludes, from a series of sixty observations, that antiperistalsis never occurs in the normal uninjured intestine so long as no pathological influences are brought to bear upon it.

The effect of injections into the rectum was next investigated, the injections being of indifferent or irritating liquid, tinted with carmine so as to show how far it was sent up the intestine, and post-mortem examination subsequently showed whether it had been carried higher by any movement of the intestine itself. A

small quantity of warm water (from two to five cubic centimetres) had no effect; it remained in the rectum until ejected by a contraction, or until it was absorbed. A somewhat larger quantity distended the rectum, but seemed to excite little peristaltic action, some of it escaping in consequence apparently of the elasticity of the bowel. Teed water caused constriction, which passed a short distance upwards so as to move the injected fluid up from five to twenty centimetres. Olive oil gave a similar result. Of greater significance, however, was the effect of a strong solution of chloride of sodium. A small quantity, three to five cubic centimetres, passed up, by the force of the injection, about ten centimetres. In a few minutes, however, the coloured liquid was carried upwards by a distinct ascending contraction, and the antiperistalsis gradually carried it, together with a mass of feces, as high as the cæcum. Sometimes the antiperistalsis took the form of a series of circular constrictions, especially marked at the highest part of the column of liquid. Besides this, descending contractions occurred in the lowest part of the rectum. Similar results were obtained with injections of concentrated solutions of nitrate of potash and bromide of potassium, and weak solutions of sulphate of copper.

Nothnagel found that the needle of a hypodermic syringe could be passed through the wall of the small intestine without exciting local contraction, and the minute wound immediately closed without allowing the escape of the intestinal contents. Injections of chloride of sodium were found invariably to cause contractions which passed upwards as well as downwards. In a case of ileus in the human subject he found that chloride of sodium solution has evidently the same effect as in animals, since a small coloured injection into the rectum was found after death to have passed upwards some distance above the cæcum. The fact may possibly prove of great practical importance in the treatment of intestinal obstruction. The injection of indifferent fluids of the temperature of the body had as little effect on the small intestine as on the rectum. The conclusion from this series of experiments is that when the intestine is under normal conditions, or contains only unirritating contents, the peristaltic contractions occur only in the direction from the stomach towards the anus. If, on the other hand, the contents of the bowel consist of an irritant substance, the stimulant causes contractions to pass also in the opposite direction. Nevertheless it was found that the latter only occurs when the irritant substance is introduced into the bowel in, so to speak, an unphysiological way. A solution of sulphate of copper was injected into the stomach, and quickly passed into the bowel, but, entering it thus, it caused only descending peristaltic contractions. Hence we must assume that, so to speak, preformed arrangements exist, of an anatomical or physiological nature, which determine the direction of the movement.

How does fecal vomiting occur in cases of obstruction of the bowels? It will be remembered that many authorities, from the time of Van Swieten, have asserted that it does not necessarily occur by antiperistaltic contractions. Van Swieten maintained that it was by the action of the diaphragm and abdominal muscles, and Brinton urged with great ability that its mechanism must be a reflex current in the centre of the distended intestine, opposed in its direction to that of the peristaltic action. Van Braam Houckgeest and Lichtenstern have experimented on the subject, and were unable to discern any ascending contractions. Nothnagel has made a large number of experiments on this subject. Ligature of the small intestine caused in some cases very little effect. The intestine above gradually became filled without any marked contractions, and the portion below gradually became emptied. In other cases, however, a series of vigorous contractions passed down from the stomach, and distended the part immediately above the ligature, ceasing in the distended portion, and as this extended upwards

higher, the section in which the peristaltic contractions occurred became smaller and smaller, until it was reduced to a narrow segment near the pylorus. After the distension had existed for half an hour, local contractions could no longer be excited by mechanical stimulation; the intestine was evidently paralyzed. In these cases there was no antiperistaltic action. In others, however, the descending contractions on reaching the ligature seemed to return up the bowel for a very short distance, and were even augmented in force just above the ligature, so that the intestine here was emptier than it was higher up. There was no regular antiperistaltic action, and after a short time these "rebounding contractions" ceased, and the distension and paralysis went on as just described. Sometimes, however, the peristaltic action quickly ceased, but the distended bowel seemed to undergo a slow imperceptible contraction, which caused its contents to pass upwards, because the ligature prevented them from passing downwards. In a series of experiments in which the intestine was ligatured through a small opening in the abdominal wall, and was returned into the cavity for some hours before the abdomen was opened, the events were found to be essentially the same. Various injections were also made into the intestine above the ligature. When indifferent liquids were injected, these were moved upwards, sometimes as much as thirty centimetres, although only by the descending peristalsis and the rebounding contractions already described as occurring just above the ligature. Injections of a concentrated saline solution, however, produced distinct ascending antiperistaltic waves, precisely similar to those produced in the unligatured bowel by the same injection, and by them the liquid was quickly moved upwards.

The paralyzing effect of the distension of the bowel above the ligature, which quickly annihilates its movements, throws an instructive light on the well-known injurious effect of purgatives in cases of intestinal obstruction. As they increase the peristaltic contractions, they carry the contents of the intestine more rapidly to the neighbourhood of the obstruction, and so more quickly bring about the paralysis which follows distension.

The results of these experiments are certainly opposed to the idea that fecal vomiting is the effect of any regular antiperistaltic contractions. These were only observed as the effect of the presence of irritant substances in the bowel, and the only condition in man in which this observation can fairly be applied is that in which irritating aperients, such as croton oil or colocynth, have been given. The simple diffusion of liquid contents causes their slow extension upwards, and a still greater effect is produced by the rebounding contractions, but the influence of both these was too slight to allow them to be regarded as the cause of fecal vomiting. The conclusion of Nothnagel therefore is that this symptom results indirectly by the mechanism which Van Swieten rightly assumed. To some very instructive observations of Nothnagel on the movements of the intestines in other morbid states, we must return on another occasion.—*The Lancet*, October 14, 1882.

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## MATERIA MEDICA AND THERAPEUTICS.

### *Naphthalin as an Antiseptic.*

Owing to the occasional startling constitutional effects produced by the topical application of iodoform, attempts have been made in various directions to discover some antiseptic which would be as useful as that drug, but free from its disadvantages. FISCHER (Strasburg) claims that he has found such an antiseptic.

tie in naphthalin, and has written articles on its use in the *Berliner Klin. Wochenschr.*, 1881, No. 48, and 1882, Nos. 8 and 9; and Anschütz has one in the *Centralbl. f. Chir.*, 1882, No. 32. Fischer read a paper on the subject before the German Medical Congress, reported in a supplement to the *Centralbl.*, 1882, No. 29.

Pure naphthalin occurs in pearly white crystalline plates, and has a specific gravity of 1.1, is somewhat volatile, and melts at  $79.2^{\circ}$  C. and is sublimed at  $150^{\circ}$  C. It is quite insoluble in water or wound secretions, and even when given internally is only absorbed in very small quantity. It appears in the urine, when so administered, as naphthalin, and can be separated from that and other secretions by distillation, as it is carried over with the watery vapour and settles down in its crystalline form as the vapour is condensed. It is insoluble in alkalis or weak acids, but dissolves freely in ether, absolute alcohol, or fixed or volatile oils. As met with in commerce it often has a rosy tint, which is due to the presence of carbolic acid. This impurity may be detected by the following test: Boil 10.15 grm. with a little water to which a drop of caustic soda solution has been added, cool and filter. If carbolic acid is present the addition of bromine water to the filtrate, slightly acidulated, produces either opalescence or a milky precipitate according to the quantity present.

Naphthalin is available for all the purposes to which iodoform has been applied, and as yet no constitutional effects have been observed to follow its use locally. It is as powerful an antiseptic and "antibacteric" as iodoform, and has a less disagreeable smell. Its application causes a slight transitory sensation of heat, but no pain. Anschütz states that very sensitive granulations sometimes bleed rather freely after it has been applied, owing to the sharp angles of the hard crystal. This can be obviated by using it in fine powder, though if there is much discharge it is then apt to form a crust on the surface of the granulations. When the crystalline form is used the discharges escape freely.

It may also prove useful as a general disinfectant, as it is cheap, not very volatile at ordinary temperatures, and not hygroscopic. In all parasitic skin diseases, especially in itch (v. Fürbringer in *Berlin. Klin. Wochenschr.*, 1882, No. 10), it has proved of considerable value, and Fischer suggests that it may be used to free domestic animals and plants from the attacks of parasites of all kinds.

It can be readily manufactured in large quantity and at small cost. A firm in Kehl, Baden (Ohlgardt & Cie.), supply it pure at the rate of 1 mk. per kilo., less than sixpence per pound.

Besides the powder the following preparations have been employed:—

Ethereal solution, 10 per cent. for injection, and also solution in oils, for injection or external application in skin affections. Ointments of various strengths can be made with lard or vaseline, and bougies with cacao-butter.

Bandages, made by sprinkling or rubbing the powder into muslin, and then moistening with water.

Gauze, made by dipping into a solution of 1 part of naphthaline in 4 of ether and 12 of alcohol (Fischer).

Naphthalin jute, 1 kilo. of compressed jute steeped in a solution of 100 grm. naphthalin in 400 grm. each of ether and alcohol, and then dried, makes a beautiful silky, white, absorbent dressing (Anschütz).—*Centralbl. f. Chir.*, 1882, Nos. 11, 16, Supplement to 29, and 32.—*Glasgow Med. Journ.*, Nov. 1882.

#### *The Use of Naphthalin Dressings.*

FISCHER first employed naphthalin dressings at Strasburg. From experiments and observation, he came to the conclusion that it is an admirable substitute for

iodoform. It is quite harmless when used on man, or on the higher mammalia, and possesses a high antiseptic value. In an atmosphere of naphthalin, all animal or vegetable micro-organisms are destroyed, whilst neither wounded surfaces nor the healthy structures around them are in the least irritated. Recently, naphthalin has been used at Strasburg for other purposes besides the dressing of wounds; such as the disinfection of sick rooms and closets, as a parasiticide in certain skin-diseases, and as an inhalation in infectious diseases involving the respiratory organs, such as diphtheria. Dr. ANSCHÜTZ of Königsberg has also published his results, agreeing entirely with Fischer. Whilst he recognizes its excellent antiseptic influence on granulating surfaces, he also says he has discovered disadvantages. He has found blood mixed with the pus from granulations, probably through their being wounded by the sharp edges of the naphthalin crystals. According to Dr. Anschütz, these crystals may also form a crust over the wound, impeding the escape of pus, although Fischer has never found this to occur. Both these surgeons have very seldom seen the slightest symptoms of poisoning from its use. DJANKONOW'S observations are based on thirty cases of wounds and abscess-cavities dressed with naphthalin, and described in the *St. Petersburger Medicinischer Wochenschrift*. His method is thus carried out in operation cases: A carbolized acid spray is turned on to the seat of operation; operator and his assistants wash their hands first with soap, then with a five per cent. solution of carbolic acid, into which the instruments are also submerged. Catgut ligatures and silk, as prepared by Czerny, are employed. The wounds or incisions are first saturated with a three per cent. solution of chloride of zinc, and then wool, dipped in naphthalin, is laid in the wound, and a bandage applied over it; a further layer of wool is covered by oiled silk; and, lastly, a second bandage covers in the whole.

The preparation of naphthalin wool is perfectly simple. The wool is first boiled in soap-lye, and then steeped in an ethereal solution of naphthalin. Anschütz and Djankonow prefer one part of naphthalin to four of alcohol, and four of sulphuric ether. The Russian surgeon employed this dressing for granulating surfaces in ten cases; five had various forms of chronic ulcer of the leg, one had a foul strumous ulcer on the chin; the four remainder had old lacerated wounds, one on the wrist, one on the thigh, one on the leg, and the fourth on the foot. All these cases looked very unfavourable when the treatment was commenced, and all the wounds rapidly became clean when dressed by this process, showing healthy granulations, and cicatrizing at once. According to necessity, the dressings were changed daily, or left on as long as for five days. In twenty recent cases of lacerated wounds, removal of tumours, excisions, and amputations, the results were admirable. In none of the above cases were there any signs of either absorption of naphthalin or irritation. In not one of the operation cases was there any appreciable rise of temperature. The secretions were never pent up by a layer of solidified naphthalin as in Anschütz's cases. Dr. Djankonow particularly recommends naphthalin dressings for surgeons who, like himself, have to treat patients in hospitals deficient in funds and with an insufficient supply of nurses. We must observe that, in this country, many surgeons will attribute more than half the merit of Dr. Djankonow's treatment in operation cases to the use of the carbolized spray.—*Brit. Med. Journ.*, Nov. 25, 1882.

#### *The Action of the Salts of Sodium, Ammonium, and Potassium.*

Drs. SYDNEY RINGER and HARRINGTON SAINSBURY have made a number of experiments with these drugs on the excised frog's heart. They find that all three arrest the ventricle in diastole; they contrast, however, in the mode of

arrest. Thus, as to their action on rhythm: Potassium salts tend markedly to arrest or suspend the spontaneous contractions, whilst yet the heart may be proved to be contractile by suitable excitation. Ammonium salts show no such tendency; the heart beats, often with an increased frequency, up to the very end—i. e., as long as contractility persists. Sodium salts fit in between, but come very much nearer ammonium than potassium salts, their action on rhythm being very slight.

As to their action on contractility, we have, on the one hand, potassium and ammonium salts acting with almost equal intensity; on the other hand, a wide gap intervening, sodium salts showing but feeble action.

One other point of contrast may be mentioned, it refers to the effect of continuous faradization. This rapidly loses its power to excite the ventricle to contraction when a potassium salt is used; not so for the other bases, and the very slight and somewhat inconstant effect for ammonium and sodium salts contrasts strongly with the uniform and marked effect of potassium salts.

Restricting ourselves to these broad lines<sup>1</sup> of contrast, some important points come out:—

First, an important fact—namely, that throughout the salts of potassium, sodium, ammonium, the potassium, sodium, and ammonium elements are traceable.

Next, that under these simple conditions specified, a certain relation between potassium, sodium, and ammonium salts is manifest. Potassium standing first as most poisonous and threatening in two directions; ammonium coming next, its action being restricted to destruction of contractility; sodium coming last and ranking as but very slightly poisonous comparatively with either. These experiments, indeed, would make potassium salts some fourteen or fifteen times as poisonous as sodium salts. This relation of the salts of potassium, sodium, and ammonium has, however, been tested on other tissues, and found to hold—e. g., on the nervous system.<sup>2</sup> The results also with the entire organism show that, whilst potassium salts are very poisonous, sodium salts can scarcely be made to kill.

Insistence has already been made in various quarters on the use of sodium and ammonium salts in preference to potassium salts; more especially has this been urged for the bromides.<sup>3</sup> (The bromide of sodium has been rather largely used in America.) Clinical evidence must obviously give the final judgment; but have we not here clear indication as to the lines on which clinical investigation should be pursued?—the suggestion being that salts of sodium should throughout be substituted for those of potassium and ammonium, till clinical evidence decide that the action of one or other of these bases is required in the particular case under treatment? This suggestion, then, is based not only on the results of experiments with the entire organism, but also on these more definite results gained from experiments on isolated tissues.—*Lancet*, Nov. 4, 1882.

#### *Physiological Effects of Tobacco.*

This is, in a special sense, the epoch of restraints, denials, and abstinences in the discipline of self and the policy of domestic life. Such progress as we are

<sup>1</sup> For further details consult papers by the authors in the *Medico Chirurgical Transactions* (vol. lxx.), and in the *Practitioner* (Aug. 1882).

<sup>2</sup> Ringer and Murrell: *Journal of Anatomy*, vol. xii. p. 71. For further reference see also Wood's *Therapeutics*; articles Potassium Salts; also *Phys. Action of Sodium and Ammonium Bromides*. Third edition, 1881.

<sup>3</sup> See Wood's *Therapeutics*, Bromide of Sodium. Also paper on Epilepsy with Cardiac Complications, by W. A. Hollis, M.D., *Practitioner*, vol. xxii. p. 81.

making is marked by a more or less philosophic abandonment of pursuits, pleasures, and habits, and the disuse of certain drinks, foods, and creature comforts which are, or are supposed to be, needless or harmful. It is impossible not to feel proud of the self-denying spirit that pervades society and the community at large, especially in the British isles, albeit, as Kant has most conclusively demonstrated, no genuine self-denial is practicable because the dominant desire or impulse at the moment of seeming to deny self is one of self-sacrifice. In a moral and mental way it is obviously possible to debilitate, instead of strengthening, the will by too much "swearing off" and protesting. It is expedient that a suggestion of this danger should be allowed to mingle with the counsels in favour of abstinences, which are just now so fashionable, and of which many "authorities" are perhaps a little too lavish. Abstinence from the use of tobacco is one of the forms of abstaining which are being pressed on the public with the energy of an active and full-blown fanaticism. We do not share the strong prejudice which finds its expression in this new counterblast. We have condemned, and shall continue to denounce, the abuse of tobacco, by its excessive, untimely, or inappropriate use. Many smokers smoke too much and take in too much of the smoke they make, others abuse tobacco by using it at wrong times and seasons, while to a third class, comprising the young and persons with special susceptibilities, tobacco is injurious in any form or quantity, and at all times, because, owing to the stage of development or some idiosyncrasy of the organism, the nicotine—which it is *impossible* to prevent passing off with the smoke—is in all its doses hurtful and even poisonous. We cannot, however, join in the outcry against tobacco in its moderate and appropriate use. Our reasons for maintaining this position in a controversy, which would seem to be recurrent, will be most readily made evident by a short review of the physiological effects of tobacco, as that commodity is known to the smoker.

It is needless to summarize the properties which have been and still are attributed to tobacco in the text-books. These are perfectly well known to the profession and have been repeatedly popularized for the public. It is with the vegetable product burnt in pipes, in the form of cigars or cigarettes, we have to deal. Practically this may be described as the dried leaves of the plant, either finely shredded or rolled nearly intact, in the former case burning very rapidly, in the latter being reduced to ashes perhaps somewhat less speedily, but with little delay. When tobacco is burnt in a clean pipe perhaps half the total quantity of the smoke given off is taken into the smoker's mouth. If an unclean pipe be used, the same quantity of smoke is taken, but, in the act of passing from bowl to stem, the smoke probably takes up some of the old oil which has accumulated in the pipe. In the case of a cigar, the smoke derived from the burning extremity of the roll of leaves is drawn between the layers of the latter with the result that probably a cigar is equivalent to a clean pipe until it has been burnt to the extent of two-thirds of its length, when it must be considered in the light of an often-used or foul pipe, because the heat and friction of the smoke have caused even the proximal portion of the burning leaves to begin to give off their oil. A cigarette is to all appearance, and, perhaps, in fact, generally speaking, a particularly mild form of pipe; but it must be remembered that the tobacco in a cigarette, being very finely shredded and only loosely pressed together, burns more rapidly than the tobacco in the bowl of a well-loaded pipe, and that it is placed much nearer the mouth than in any pipe, except it be the very short one used by navvies. It is therefore likely to happen that the habitual and almost continuous smoker of cigarettes—the man who seldom has one out of his mouth except at meals, and even then can scarcely refrain from a whiff—may in the course of the day consume a very large quantity of tobacco without perhaps being



conscious of excess. The form of the "smoke" has, therefore, evidently a bearing on the amount of tobacco consumed. The mode of taking in the smoke is also important. Some smokers simply take the smoke between their lips, and, scarcely allowing it to enter the mouth, blow it out again; while others hold the smoke in the mouth, even carrying it back to the fauces, and occasionally ejecting it through the nose. The smoker who draws the greatest amount of smoke and keeps it longest in contact with the living membrane of the air-passages undoubtedly takes the largest dose of the oil.

There are three points to consider—first, the local effects of the oily vapour from the burning leaves; second, the immediately contingent effects of the tobacco; and, third, its remote or secondary effects. Each of these would call for special study in an exhaustive investigation of the subject. We cannot, on the present occasion, do more than suggest the line of inquiry to be pursued. As regards the local effects, it is especially desirable to be observant. There can be no question that the influence exerted on the mucous membrane of the lips, mouth, tongue, palate, epiglottis, larynx, and fauces by smoking is important. There is first dryness, then hyperæmia of the membrane itself, next comes excitation of the nervous filaments distributed throughout the region, with direct irritation of the centres, and reflex stimulation of the glands. In consequence of this last-mentioned set of effects, we get either increased secretion or very prompt emptying of the salivary glands, and either waste of the saliva, or the passage of that fluid into the stomach—probably at the time empty. The saliva is, moreover, to some extent impregnated with the oil derived from the smoke of the tobacco. It is easy to see how local disturbances, such as epithelial growths, innocuous or malignant indurations, and the like, may be induced by smoking; how the nervous centres connected with the various nerves distributed to the mouth, tongue, and fauces may be affected; how the salivary glands may be over-stimulated and exhausted; and how the stomach may be disordered. The passage of salivary fluid into an empty stomach may help to appease the appetite, but it can scarcely improve the digestion. Other local effects might be mentioned, but they will suggest themselves. Next come the immediately contingent effects of smoking. These may be either stimulating, sedative, or toxic, as the quantity of the nicotine actually introduced to the system—a very difficult point to settle—varies or the idiosyncrasy of the smoker may determine. The sum of the investigations that have been made in connection with this phase of the subject would seem to show that nothing short of direct experiment in any particular case can supply the requisite data for determining how the smoking of tobacco is likely to affect an individual. And the deduction which may be hastily drawn from a few experiments will need to be qualified by the further consideration that the susceptibility of the organism for the influence of tobacco-smoking varies in a very special degree with those changes of state to which all systems, and specially those of the class of persons who require or desire the use of tobacco, are subject. One man can smoke with the best results when he is hot, another when he is cold; one needs to have a full stomach, while another enjoys his smoke most in the early morning, or when he is hungry; one will take his pipe or cigar when he has to think, another must be idle to profit by it; and so on. With every change of mind, nerve-state, and condition of health, the susceptibility to tobacco varies. It is useless to try to lay down any precise law as regards its action. The use of the "weed" is in every case experimental, and its immediately contingent effects are incapable of prediction. As a rule, however, we believe they are, in the moderate use of tobacco, according to the individual taste, good instead of evil; but the patient, rather than the doctor, is the judge of results, and it is policy on the part of the latter to refrain from dog-

matizing on the subject in any special ease. The remote or secondary effects of tobacco-smoking are certainly not *cumulative*. There is not a particle of evidence which can be legitimately pressed into the service of the assumption—sometimes recklessly and unscientifically made—that they are so. A man may exhaust the strength of his nervous system and thus lower its tone, or he may impair his digestion, by habitual excess in smoking, but these results are in no sense cumulative, nor has the agent by which they have been produced been cumulative in its energy. The disastrous effects of tobacco-smoking—when too much is smoked or the tobacco is too strong—are those of persistency in the use of an injurious article, not a piling up of its effects. This is especially indicated by the state of the pulse in habitual smokers to excess. The sphygmograph shows a depressed state of the vessels while the smoking continues, and for a short time after a pipe, but the effect generally passes off when the use of the drug is abandoned for a few hours. So with the disturbance of digestion produced by excess in tobacco-smoking, and with its other “evil consequences,” which have been much exaggerated.

There is very little, if anything, to be said against the moderate use of tobacco in an average state of the organism. Those who are unfavourably affected by it should abstain, and it is wholly inadmissible in youth. We would go so far as to say that no young man should smoke before he has attained his majority, and it would be well if he deferred the use of tobacco altogether, and in every form, until the extreme limit of development, which may be placed at the age of twenty-six. It is impossible to give any precept as to the time and mode of smoking. Personal sensibilities differ so widely that no common premises can be laid down. Speaking generally, the points of caution should be to avoid—irritation of the mucous membrane of the mouth and fauces, loss of the salivary secretion, and super-excitement of the nerves and nerve-centres. Cigars are better than pipes, and far better than cigarettes; but no cigar should be smoked for more than three-fourths of its length, even with a mouth-piece. The smoke should be taken into the front of the mouth and ejected as rapidly as possible. Properly and moderately employed, tobacco-smoking is not a baneful habit, but one that may be reasonably enjoyed.—*Lancet*, Nov. 4, 1882.

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## MEDICINE.

### *Hæmoglobinuria.*

It is now some years since the paroxysmal and non-toxic form of this disease was first observed and described; but while much has since been done in the way of rendering our knowledge of it more complete, there still remains considerable uncertainty on many points regarding the disease. This uncertainty can be resolved only by the careful record and collation of individual cases, and therefore no excuse need be offered for bringing together the results of three cases recently recorded.

The most important of these is undoubtedly that placed on record by Dr. FLEISCHER (*Berl. Klin. Wochenschrift*, 1881, No. 47). The patient was a young soldier, aged twenty-three, of good family history, and good general health. In the beginning of the previous year, after a severe march, he noticed for the first time that his urine was bloody in colour. The symptom was unaccompanied by rigors, sweating, or pain in the region of the kidneys. By the evening his urine

was again clear. To sum up the case: Dr. Fleischer found that he could excite an attack of hæmoglobinuria in this patient with the most absolute certainty by simply directing him to walk for two hours continuously. After an hour's walking the urine would still be normal, but three-quarters of an hour later it would contain both albumen and hæmoglobin. The albumen and the hæmoglobin came together, and, after twenty-four hours at the longest, disappeared together. Heller's blood-test and the spectroscopic lines proved the presence of hæmoglobin. Neither blood corpuscles nor casts were at any time discovered in the urine. The patient felt somewhat out of sorts during the attack, with giddiness and slight loss of appetite. To eliminate various elements in the case, Dr. Fleischer subjected the patient to certain experiments. First, to ascertain if the cause lay simply in the physical exertion of walking, he set him to severe, but stationary, labour, with the result that after two hours the urine remained perfectly normal. Heat and cold, contrary to what is generally held, seemed to produce no effect. A prolonged warm bath, with a large dose of pilocarpin, had as little effect on the urine as a prolonged cold bath. Nor, apparently, was special activity of the kidneys a factor of the case, for seven glasses of beer drunk conscientiously in the same number of hours produced no abnormal constituents in the urine. Diminution of the alkalinity of the blood, by a drachm and a half of lactic acid, and by a drachm and a half of phosphoric acid, taken in the course of a day, was likewise without effect, as was also a dose of three drachms of bicarbonate of soda. The amount of urea excreted during the attack was considerably diminished; but this must be put down to diminished absorption, as there was no after-increase in the amount excreted to indicate an accumulation of urea in the system. Before an experiment, a blister was applied on the chest. During the first hour the blister did not rise, but in the course of the second hour it rose, and the fluid of the blister, although yellow in colour, contained hæmoglobin. The case is evidently an important one, showing that cold is not so universally the cause as has hitherto been supposed, and strengthening considerably the belief that hæmoglobinuria is not a renal, but a general blood disease.

The second case is recorded by Dr. STRÜBING (*Deutsche Med. Woch.*, 1882, No. 1). The patient, a wheelwright, aged twenty-nine, noticed in 1876, after a severe march during his military service, that his urine was blood in colour. During the previous months he had contracted a chancre, which, however, healed without medical treatment. After this he noticed his complexion began to get paler and yellower than before. The hæmoglobinuria came on subsequently, generally in the morning, after severe labour or mental excitement. There was neither rigor nor sweating. The splenic region was extremely tender, and there was considerable dyspnoea and palpitation, with sometimes *museæ volitantes*, *tin-  
nitus aurium*, giddiness, and weariness. After the attack the region of the kidney was tender. Cold seemed to have no effect whatever in producing an attack. The presence of hæmoglobin was proved by Heller's test and by the spectroscope. The microscope showed a few blood-disks with hyaline and epithelial casts and masses of hæmatoidin. Once when the attack occurred at midday the serum of the blood was examined and found to contain hæmoglobin. As to treatment, large doses of iron taken by the patient on his own account distinctly increased the attacks in number and severity. Quinine and general tonic treatment having failed, anti-syphilitic treatment was instituted, and under this the patient improved considerably.

The third case is somewhat meagrely recorded by Dr. OTTO (*Berl. Klin. Woch.*, 1882, No. 39). The patient, aged fifty, was the subject of melancholia, and during an attack of that disease had complete retention of urine, which, on being drawn off with the catheter, was found to be bloody in colour and to con-

tain a large amount of albumen and hæmoglobin. The microscope showed a few blood-disks with very numerous hyaline casts. During the day urine was passed naturally and got gradually clearer. When the patient's mental condition bettered, he said he had had attacks of blood-coloured urine ever since he had served in the Franco-German War. The attack always commenced with a rigor, and was distinctly associated, he believed, with exposure to cold and wet. Soon after the attack recorded the patient died of an intercurrent disease, the urine remaining normal in colour till death. The left kidney was found twice as large as the right, which was of normal size. Both kidneys are said to have been normal in structure, but it is not stated if they were examined microscopically.

We may note, in conclusion, a possible source of fallacy indicated by Dr. NEUSSER (*Wien. Akad. Sitzungsber.*, 1861, December 3), who has found in the urine of two patients a colouring matter which gives exactly the same spectroscopic lines as hæmoglobin, but which, giving a negative result with Heller's and with the guaiacum test, is not hæmoglobin. In the one patient, a case of pleuritic effusion, it was not associated with albumen; in the other, a case of tubercular plithisis with chronic Bright's disease, it was. Dr. Neusser believes that the substance is allied to the hæmato-porphyrin of Hoppe-Seyler, but could not procure enough for analysis.—*Med. Times and Gaz.*, Oct. 14, 1882.

#### *Fat Embolism.*

Drs. SAUNDBY and BARLING have contributed to the *Jour. of Anat. and Physiol.*, vol. xvi., a valuable paper on this subject. Commencing with an historical summary of the various researches that have hitherto been made into the pathology of the production of fat embolism since its discovery by Zenker in 1862, they relate particulars of a case which occurred at Birmingham in June, 1881, of a man, aged 37, who had sustained a compound comminuted fracture of one leg, a long interval having elapsed before surgical treatment had been applied. On the second day, the pulse, temperature, and respiration having all become increased, the patient, without any other premonitory signs, became semi-comatose, with flushed face and stertorous breathing, and subsequently marked cyanosis. In this state he died on the third day after the injury. On microscopic examination of the lungs, numerous fat emboli were found in the small arterioles, and a few only in the capillaries. In the kidneys also emboli were discovered, chiefly in the vessels of the glomeruli. None were seen in the lumen of the tubules, but some of the epithelial cells were loaded with minute granules.

A series of observations were then made into the conditions of the lungs in cases of death from various forms of disease and injury. In eight cases of very severe injury, none of which survived more than two days, emboli were found in the lungs. No symptoms had in any case pointed to their presence before death, nor were they very numerous when discovered *post mortem*, especially when considered in comparison with those discovered in the case related. In only one of the cases of disease examined were any emboli found, viz., in a case of diabetes with milky blood, the particulars of which were published by Dr. Rickards in the *Birmingham Med. Rev.*, June, 1882. The microscopic appearances in this case, however, differed from those in the cases of death following fracture. The fat-globules were found to be present in the clots filling the vessels, but were not found distending or completely blocking the vessels, as in the other cases. It is probable that these globules were of *post-mortem* formation, due to the running together of fine oil-granules.

The occurrence of true fat-embolism in cases of diabetes with milky blood is not yet clearly established, and the negative evidence at present prevails over

the positive. Similarly, in a case of farcy recorded by Dr. H. Bendall, the presence of fat-emboli was clearly demonstrated, whilst a corresponding case investigated by Mr. Stanley Boyd gave completely negative results.

From the evidence of the paper by Drs. Saundby and Barling, the occurrence of fat-embolism in cases of severe injuries to the medullary tissue of bones must be considered to be clearly proved. The positive results obtained by observers upon this point are conclusive; and, in the course of the observations recorded, the strong probability of its occurrence in certain injuries of soft tissues and after major operations cannot be disregarded. Further investigations in this direction are needed.—*London Med. Record*, Nov. 15, 1882.

### *Febrile Albuminuria.*

ECKSTEIN distinguishes three classes of cases where albumen occurs in the urine of acute febrile disease: first, albuminuria caused by acute nephritis; second, the so-called febrile albuminuria; and third, albuminuria caused by venous hyperæmia. The last form, in which the urine is small in quantity and of high specific gravity, occasionally containing casts and renal epithelium, is diagnosed mainly by the presence of other symptoms pointing to venous hyperæmia, such as cyanosis, enlargement of the liver, and dyspnoea.

Dr. Eckstein opposes the belief that venous hyperæmia is the sole cause of albuminuria in febrile disease. He believes that it is the sole cause of the albuminuria occurring in acute croupous pneumonia, and in rapidly formed pleuritic effusion, the local affection acting mechanically, first on the right side of the heart, then on the venous system generally. Acute nephritis Dr. Eckstein believes to be a metastatic inflammation, an infective process, in which the micro-organism, although it has not yet been demonstrated, as in kidney affection from diphtheria or pyæmia, will at no distant date be isolated. The result of acute nephritis is either complete recovery or death, very rarely chronic nephritis. In the so-called febrile albuminuria, which Dr. Eckstein mainly considers, the amount of urine is but slightly diminished, according to the severity of the fever itself; the amount of albumen is moderate, and the normal excretory constituents of the urine are not diminished. That the albuminuria in such cases is caused by hyperæmia of the kidney, either active or passive, seems to Dr. Eckstein improbable; because the first result of a congestive hyperæmia would be an increased amount of urine, which is not present; and, on the other hand, there is no reason to suppose a passive hyperæmia, except in such cases as have been already classed under albuminuria from direct venous congestion.

Runeberg has lately explained the diminished secretion and albuminuria in febrile diseases by the degeneration of the heart-muscle and consequent fall of arterial tension; but, as Dr. Eckstein points out, in many diseases where the arterial tension is reduced to a very low point, there may be absolutely no albumen in the urine. That the albuminuria is caused simply by the abnormal temperature, or by an alteration of the albumen of the blood, is not, Dr. Eckstein believes, supported by fact; for the albuminuria is frequently in no relation whatever to the temperature, and the albumen in the great majority of instances in no way differs from the serum albumen of the blood.

After a full and interesting discussion as to the pathological basis of febrile albuminuria and the varieties of it in different affections, Dr. Eckstein sums up his views as follows: Febrile albuminuria depends on a local process in the kidneys of an inflammatory nature, or at least closely related to inflammation, and having its site mainly in the epithelium of the kidney, cloudy swelling, albuminous infiltration, or parenchymatous inflammation. This process is probably caused by an

infection of the kidneys, either from the passage through them of low parasitic organisms, or from the inflammatory action of soluble toxic substances passing through them. The same infection acting in a stronger degree can produce acute nephritis. Acute infective nephritis, therefore, and febrile renal affection, are only different degrees of the same process, or, in other words, the febrile renal affection is an aborted acute infective nephritis.—*London Med. Record*, Nov. 15, 1882.

*The Previous Symptoms in Cases of Perforation of the Bowel in Typhoid Fever.*

Dr. JOHN W. BYERS groups the premonitory symptoms of perforation in typhoid fever as follows:—

1. We are warranted in saying that perforation is met with most frequently in the more serious cases of the disease. Liebermeister and Murchison both agree in this; the latter states that, "in a large proportion of cases of perforation, the previous symptoms are severe, and diarrhoea, as might be expected, is a prominent symptom. This was the case in sixty out of sixty-nine of my patients; in eleven of the sixty, the symptoms of the peritonitis were preceded by considerable intestinal hemorrhage, and in many there was an unusual amount of abdominal pain."

2. As regards great tympanites, Sir W. Jenner says: "A single deep slough-formed ulcer will paralyze the action of the bowel, and lead to such an accumulation of flatus as produces enormous distension of the abdomen." It is just in such a case that perforation would be likely to occur.

3. Continued elevation of temperature after the third week, in the absence of any complication, usually points to severe intestinal lesion.

4. As to constipation, Sir William Jenner has pointed out that "a single deep ulcer will paralyze the action of the bowel, and so cause constipation."

5. Another symptom is severe tremor.

6. Protracted headache in the early stages is believed by Dr. Broadbent to denote an unusually severe affection of Peyer's patches.

7. Dr. Cayley has directed attention to the value of *tâche cérébrale* in enteric fever. He says it often lasts for some time after convalescence has set in; and he regards its persistence as an indication that the intestinal ulcers have not yet healed; and that, therefore, the patient is still liable to relapses, and to the complication attending unhealed ulcers.

In the case of which Dr. Byers gives the notes, the symptoms which he thinks pointed specially to the condition of the bowel, were the following:—

1. The severe tremor was a very marked feature of the case, and the members of his clinical class had frequent opportunities of observing it. In his admirable lecture on the treatment of typhoid fever, Sir William Jenner draws particular attention to this symptom. "Tremor," he writes, "out of all proportion to other signs of nervous prostration, is evidence of deep destruction of the intestine. A small deep slough will be accompanied by great tremor; a large extent of superficial ulceration may be unattended by symptoms. Now, it is deep ulcers following the separation of deep sloughs, which are specially liable to give rise to severe hemorrhage and perforation." Murchison also lays down the rule, that "severe and protracted muscular tremors, especially when the mind is clear, indicate deep and rapid ulceration of the bowel." His case, in which tremor was a marked sign, and in which perforation occurred, confirms very fully the careful observations of these two able clinical teachers.

2. As regards the continued elevation of temperature; inasmuch as no local mischief could be detected in any organ to account for this pyrexia, Dr. Byers

was driven by exclusion to believe that it pointed to severe implication of the bowel. Severe diarrhoea and meteorism were also present in the early stages of the case. When, then, in a case of enteric fever, we suspect, from the presence of some of the symptoms that have been mentioned, that there is severe and deep ulceration of the intestine, our treatment should, he thinks, aim at keeping the bowel quiet; and, in order to carry this out, a combination of these plans may be adopted.

a. The patient should be kept perfectly quiet, and should on no pretext be allowed to sit up or to leave his bed. Indeed, if possible, he should be made to lie on his back. The nurse or other attendants should be made clearly to understand, that the slightest movement on the part of the patient (such as sitting up or turning on the side) may cause the wall of the bowel, which forms the floor of the ulcer, to give way, and so precipitate the patient's death from perforative peritonitis.

b. The strictest attention should be paid to the character of the food, which, while it must be nourishing, should be liquid; and no purgative should on any account, especially when there is constipation, be given.

c. Opium should be given to paralyze the movements of the bowel. By this, which may be called the anticipatory administration of opium, the ulcers are placed in a better condition for healing, and the chance of rupture of their floors, from sudden movements of the intestine, is minimized.—*Brit. Med. Journal*, Nov. 4, 1882.

#### *Chickenpox or Smallpox?*

In his report on the Gloucestershire Combined Sanitary District, Dr. BOND discusses at some length the probable relationship between smallpox and chickenpox. The first case of the outbreak on which Dr. Bond comments was that of a tramp who contracted smallpox. He was isolated in the infectious hospital. He stated that he had been vaccinated about twelve years ago, and he had one good mark on each arm. This was the first of six cases which happened in the Cirencester Urban District. Three other cases occurred in a cottage situated about a mile from the town. The first was that of a boy, who was at once removed to the hospital; and, when Dr. Bond saw him a few weeks afterwards, he had all the appearance of a patient recovering from a very mild attack of smallpox, or from what some people would call a very well marked attack of chickenpox. Ten days afterwards, two adult labourers, who were lodging in the cottage at the time the boy was removed from it, were attacked with a general eruption, which exhibited still more distinctly the characteristics of mild smallpox. These were removed to the hospital; and shortly afterwards the father of the boy and another lodger were also attacked with a milder form of the same eruption, but it was not judged necessary to remove them to the hospital. The mother and another lodger were also attacked.

There are several points of interest connected with this outbreak. In the first place, was it genuine smallpox? Dr. Bond is of opinion that it was; but he admits that the first of the cases—the boy—would have passed fairly current as an illustration of what, by most medical men, would be called chickenpox. As to the two labourers, Dr. Bond has no hesitation in saying that, if they had not smallpox, he does not know what the disease was; but the type was unquestionably a mild one. All the six cases which occurred in connection with this cottage were reported to have been vaccinated in infancy; but none of them had been re-vaccinated except the mother, who had two good marks; and in all cases the severity of the attack was in an inverse ratio to the goodness of the vaccination marks visible.

Presuming that this was an outbreak of smallpox, Dr. Bond discusses whence the infection came. There had been several scattered cases of disease, which had been treated by the practitioners who attended them as ordinary chickenpox; but there was no evidence to connect his case even with one of these, any more than with the infection of distinct smallpox; and yet it seems clear that his case was the origin of all the others at the cottage. Eight days after the removal of this boy to the hospital, a case of severe smallpox occurred in the town. No source of infection could be discovered, except that the girl had been in the company of a young woman who some months previously had an attack of "chickenpox."

Dr. Bond then discusses the probable relation of this with the earlier cases; but he arrives at no satisfactory conclusion. What appears the most probable was, that the infection of what people call chickenpox, but which Dr. Bond prefers to call mild smallpox, was prevalent in the neighbourhood at the time; and that, for some not very evident reason, it attacked these persons with unusual virulence, and with a virulence, indeed, which in one case, could leave no mistake as to what was its true nature. But, if this assumption be correct, what becomes of the distinction between smallpox and chickenpox? And how far are we justified in looking on this latter affection as an innocuous one? That it is innocuous in the large majority of cases, both to the individual and to those with whom he is in contact, seems unquestionable; but, if these cases bear the interpretation Dr. Bond has put on them, it becomes a grave question whether even the mildest cases of so-called "chickenpox" should not be treated, if not with as much care in regard to isolation as smallpox, at any rate with much more care than it generally is.

A somewhat similar case occurred in the Westbury district. In this instance, the subject of the disease was the wife of the keeper of a small beerhouse in an unfrequented part of a forest. The patient asserted that she had been vaccinated, and also revaccinated when about twelve years of age; but Dr. Bond could only find two poor marks on the left arm. The most searching inquiry failed to elicit any evidence to show how the disease could have been imported into the house, which, though nominally a beerhouse, was so entirely out of any thoroughfare, that it could scarcely be used as a house of call by wayfarers. Both the keeper and his wife most strenuously denied either having been away from it, or having had anyone in it, for more than a fortnight previous to the outbreak, who could have brought the infection. What seems equally singular is that, although there were seven other persons living on the premises, and although, when Dr. Bond visited them three weeks after the patient was taken ill, which was immediately after he heard of the case, not one of them had been revaccinated, yet the disease did not spread. It is also deserving of notice that, in a cottage which adjoins the one in which this case was then convalescing, Dr. Bond found a child of about nine years of age with an eruption which would be ordinarily designated as chickenpox. Dr. Bond could not discover that any other cases of chickenpox had existed in the neighbourhood; and the coincidence of these cases is suggestive, when considered in connection with the Cirencester outbreak.—*Brit. Med. Journ.*, Oct. 28, 1882.

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*The Localization of Aphasia associated with Hemianæsthesia or Hemichorea.*

The combination of hemianæsthesia and aphasia in non-hemiplegic subjects is by no means common. M. BRISAUD has, however, observed two striking examples, an analysis of which he has recently published.

Starting with the consideration of cortical lesions he shows that it is almost impossible that such a lesion should produce the two symptoms referred to without motor paralysis being associated with them, while it is not tenable to suppose that



there should be exactly similar simultaneous lesions existing in both sides of the brain. And as nothing short of two separate lesions in the white matter of the centrum ovale could account for this association of symptoms, this theory also may be abandoned. As regards the theory that a central lesion will satisfy these conditions, he first notes that Flechsig's plan of making horizontal section gives more reliable results than the vertical method employed by Pitres. He shows that the posterior third of the posterior half of the internal capsule contains sensory fibres, while motor fibres are found in the anterior two-thirds, and that where the anterior and posterior sections join, is a band of fibres coming from the third frontal convolution. With these data given it is only necessary that the clot should extend from the bend of the capsule to the sensory zone, leaving the pyramidal fibres intact, and in one of the cases reported this was the precise locality in which the hemorrhage took place. In another case of aphasia and hemichorea, without paralysis, a hemorrhage was formed in the lenticular nucleus, extending in one direction to the bend of the capsule, and at the other to a point midway between the pyramidal strand and the sensory zone.—*Progrès Méd.*, Oct. 7, 1882.

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*The Influence of Drugs on the Irritability of the Cerebrum with reference to the Treatment of Epilepsy.*

Prof. ALBERTONI's experiments were performed on dogs and apes, the drugs used being bromide of potassium, atropine, and cinchonidine. For full details we must refer to the original (*Archiv für Experim. Path. und Therap.*, Band xv. Heft. 3 and 4, 1882). The author sums up his results as follows: 1. The continued use of bromide of potassium very markedly reduces the irritability of the cerebrum in dogs. Electric stimulations, which in the normal condition are effective, produce, after the use of bromide of potassium, either no result or a very slight one. Even a single large dose considerably dulls the cerebral irritability. After continued use of bromide of potassium, it is no longer possible by electric irritation of the cortex cerebri in dogs (the area, namely, for the facial nerve and the extremities) to cause epileptic attacks, not even when much stronger currents are used than those sufficient to produce them in the normal condition. From this it may be concluded that the bromide of potassium presents a strong resistance to the extension of the discharge from the irritated point to the rest of the cerebrum. 2. Atropine increases the irritability of the cerebrum, the surface of which, during its use, shows a greater sensitiveness to electric stimuli. This action is especially marked with not very high but still poisonous doses of the drug. Differences of irritability and development of the cerebrum explain the following interesting facts: *a.* The slight action of atropine on children and young dogs; *b.* The much stronger cerebral action of atropine on the dog than on the sheep, the brain of the latter, although more developed, being much less irritable; *c.* The absolute inertness of this material in the case of pigeons, whose cerebrum is unirritable. The possibility of causing epileptic attacks in the higher mammalia by electric stimulation of the cortex cerebri is neither removed nor weakened by continued use of atropine. 3. Cinchonidine in therapeutic doses increases in epileptics the frequency of the attacks, and, along with all other active principles of cinchona bark, is contraindicated in epilepsy. After removal of the cerebrum or psychomotor centres, cinchonidine still causes epileptic attacks. Its action is on the central motor ganglia. The continued use of bromide of potassium prevents the production of epileptic attacks in dogs by large doses of cinchonidine. It also prevents the fatal action of cinchonidine. The continued use of atropine in no way affects the epilepsy-producing, nor the fatal action of cinchonidine. It will, therefore, be seen that bromide of potassium would be of use in cases of epilepsy

arising from tension of the nerve-centres, while atropine would be absolutely injurious. In cases of epilepsy from fright, or from congestion of cerebral vessels, or in cases of peripheral origin, atropine may possibly be useful.—*Lond. Med. Record*, Oct. 15, 1882.

### *Embolism in the Spinal Cord.*

Cases of embolism of the arteries of the spinal cord are so rare, that the following account of an alleged example of the affection, which we abstract from an article reported in the *Wiener Medizinische Wochenschrift* (Nos. 42 and 43), will probably be read with interest. The patient was a boy aged sixteen years, who, up to June, 1879, was apparently in good health. On the 6th of that month, whilst at work in the stables, he experienced a sharp pain in the thighs, which travelled thence upwards towards the gastric region, and backwards to the corresponding portion of the back. Paralysis of both lower extremities, of the vesical and rectal functions, and complete cutaneous anæsthesia of both lower extremities and loins, dated from that time, and for three days and nights severe neuralgia affected the lower extremities. According to the mother's account a deep blue discoloration of the skin about the sacral region was to be seen on the first day after the sudden onset of the disease; and after three or four days a slough appeared, which spread in depth and breadth, till, on his entry into the hospital, it was about two hands-breadth in size, and laid bare the bone. Similar sloughs appeared in the course of the next two weeks over each trochanter major. Four weeks after the beginning of the disease the legs were œdematous. The state on admission to the hospital fully confirmed the account of the previous history. The patient was much wasted and anæmic; there was no sign of cardiac disease. There was no excurvation or irregularity of the vertebral spinous processes, *i. e.*, no sign of disease of the spine. The muscles of the arms were much wasted; both the biceps muscles were tolerably strongly contracted, but with this exception there was no real impairment of movements in the upper parts of the body. Anæsthesia of the lower limbs existed in front as high as Poupart's ligaments; behind, as high as the last ribs. The muscles of the lower limbs were absolutely paralyzed and completely atrophied. The patient could not sit up. No plantar or knee "reflexes" could be got. The urine, which flowed away continually, was cloudy, alkaline, ammoniacal, and contained a trace of albumen, with a sediment of epithelial pus-cells and crystals of triple phosphate. There was no spontaneous action of the bowels.

There was but one rigor, on October 14, 1879—temperature then 106.5° Fahr. —otherwise there was continued fever, fluctuating between 100.5° and 104° Fahr. Death ensued on October 18.

At the autopsy some areas of softening in the cortex and underlying white matter of the cerebrum, mostly about the size of a pea, were seen; the whole of the lumbar region of the spinal cord was soft and almost fluid; in both these situations Gluge's corpuscles were found, and the vessels were plugged with tough fibrin. The kidneys were diseased, and there were signs of old infarcts in them. The spleen showed some recent hemorrhagic infarcts. There were vegetations on both flaps of the mitral valve.

The diagnosis of the case during life was one of extreme difficulty. Dr. Weiss, under whose care the patient was, passed carefully in review the causes which would explain the symptoms. Acute myelitis, hemorrhage within or without the spinal cord, embolism of the spinal arteries, successively presented themselves for consideration. Against the notion of embolism was the circumstance that no sign of heart disease was discovered during life. That thrombosis of the vessels existed there can be no reasonable doubt, but it must be a question, con-

sidered theoretically and scientifically, whether the plugging of vessels observed was primary or secondary. The fact that large granular cells—so-called inflammatory corpuscles—were found in the softened tissues is held to be sufficient evidence that the *ramollissement* was a real pathological one. The presumption, it is fair to admit, is greatly in favour of the notion that the case is one of embolism, seeing that evidences of that process existed in the kidneys and spleen, and probably also in the brain.—*Med. Times and Gaz.*, Nov. 18, 1882.

### *Pathology and Treatment of Whooping-cough.*

At the meeting of the Medical Society of London, held Oct. 16, Mr. DOLAN read an abstract of his essay on Whooping-cough, to which had been awarded the Fothergillian medal of the Society. Dealing with some points of its pathogeny, he expressed his dissent from the view of Guéneau de Mussy, that the malady was a bronchial adenopathy, its chief symptom being induced by pressure on the vagus by the enlarged glands, and showed that this glandular enlargement was not always present in pertussis, and further that the glands may be swollen without producing the characteristic cough. The disease, indeed, bore much resemblance to those diseases the causes of which are now believed to be minute organisms or fungi. Its highly contagious nature, period of incubation, effervescence and defervescence, its regular course, and the immunity from subsequent attacks, were grounds of analogy determining the place of pertussis in the group of diseases caused by protophytic fungi. The attempt by Linnæus to prove that all diseases were produced by animalcula, or had an insect origin, foreshadowed the conclusions now arrived at by the discoveries of Pasteur. In 1867 Poulet found bacteria in the sputa of pertussoid patients, and Letzerich had induced whooping-cough in rabbits by inoculating the trachea with sputa from the human subject. The author had repeated these experiments, and found that whilst inoculation with the blood of whooping-cough patients was without effect, that of sputa and other secretions caused death. He had found also on microscopic examination of sputa ordinary bacteroid forms, and a microbe resembling the spirochæte plicatis of Cohn. The application of special methods of staining, as employed in the detection of the bacillus tuberculosis, would no doubt reveal the special microbe of pertussis. Admitting the fungoid nature of pertussis, its contagious property was easily explained by germs being thrown off into the air and received into the body, setting up constitutional disturbance, and subsequently attacking the pulmonary epithelium, giving rise to all the phenomena of pertussis. No pathognomonic lesions could be detected on post-mortem examination, for the simple reason that whooping-cough was rarely fatal; death resulted from complications which were very numerous. As to glycosuria in whooping-cough, he had found it present in fourteen out of fifty cases. Turning to the question of treatment, he pointed out the necessity for measures of isolation in preventing the spread of the disease, for the enforcement of which measures the co-operation of all classes of the community was needed; and although the course of the disease could not be controlled by treatment, the patient could be placed in the most favourable circumstances towards recovery; certain painful and prominent sources of trouble could be relieved and complications guarded against so as to assist nature in her efforts to throw off the disease. There was no panacea or specific remedy, but if the dependence of whooping-cough upon a specific virus be the true explanation of its pathogeny, the lines on which its rational treatment and prophylaxis were to be pursued became clearer and more hopeful.—*Lancet*, Oct. 21, 1882.

*The Nature of Croupous Pneumonia.*

The nature of croupous pneumonia has always been a fertile field for speculation. The opinion that it is a simple inflammation due to a simple cause long received unquestioning acceptance, until points of resemblance between pneumonia and an acute specific disease led to more careful study of its conditions of origin. It is still to these that the attention of physicians is chiefly turned. Pathologists, it is true, are seeking for its associated bacterial organisms, and we lately referred to the important observations of Friedländer on this subject; but bacterial pathology is still in too early a stage to permit much weight to be placed on the discovery of organisms in association with acute inflammation as evidence of a necessary causal relation. But the etiological facts, if well observed, have a value which no theory can shake, for they must be embraced by it as a necessary condition for its acceptance.

Many facts have lately been adduced in support of the opinion that croupous inflammation of the lung is but the local expression of a general disease, and the evidence in favour of this view has been ably summarized by an American physician, Dr. E. Sanders, in the *New York Archives of Medicine*. The most weighty evidence is, of course that furnished by the analogies to which we have referred, but the occasional epidemic character of outbreaks of pneumonia is an etiological point of considerable weight in support of the theory. It is necessary, however, in order to establish the specific pathology, to disprove the current opinion that croupous pneumonia may result from mere exposure to cold. Some have, indeed, been content to overcome the difficulty by the admission that there are two forms of croupous pneumonia—one due to cold, and the other a specific disease. But the sporadic cases which are usually referred to cold are precisely those which present that resemblance to acute general diseases which still constitutes perhaps the strongest part of the argument for the specific nature of the malady. Accordingly, most of the advocates of the latter view have felt that, to establish their argument, they must disestablish the current theory and disprove the dependence of croupous pneumonia on exposure to cold.

The task is one of no small difficulty, and from isolated observations perhaps impossible. Attention has therefore been turned to the comparison of pneumonia with the meteorological influences. It seems well established that the disease does not coincide in the time of its occurrence with the lowest annual cold. It is not a disease of winter, but of spring. Some facts corroborating this opinion have been lately collected in the *Revue des Sciences Médicales*. In the three great hospitals of Vienna, between 1866 and 1876, 11,442 cases of pneumonia were treated—8247 men and 3195 women. The largest number of cases were admitted in the month of April, the next largest in the month of March, and next in the month of May.

Kühnhorn observed in the barracks at Weser 300 cases of pneumonia in the course of eight years, and found that the number of cases in the three months of March, April, and May were four times as great as in the months of September, October, and November. Warfvinge, in Stockholm, observed a maximum in the month of May.

But we can scarcely admit the validity of the assumption that because pneumonia does not coincide in prevalence with the lowest temperature it is therefore not due to exposure to cold. The prevalence in Vienna was compared by Biach with the meteorological report, and three conditions seemed to coincide with the disease; a sudden fall in atmospheric pressure, a low temperature, and sudden changes in temperature. A similar comparison has been made by Masson with regard to 400 cases of pneumonia occurring at Berne and Neuchâtel; and he

found that pneumonia was most frequent when the temperature of the air was low and its humidity slight; and a comparison of the conditions on the day before the onset of each case showed with great frequency a sudden fall in both temperature and atmospheric pressure. On the other hand, Kühnhorn failed to observe any relation between his cases and the temperature; but his data appear more open to objection than the others to which we have referred.

The evidence afforded by epidemics of pneumonia would be more conclusive if such epidemics were less rare. Nevertheless they are of great interest, and certainly deserve most careful study. Some of them are described by Dr. Sturges in his work on pneumonia, and several others have been lately recorded.

Holwede and Munnick observed an outbreak of fifteen cases in a small village (Ober-Sikle), containing only 400 inhabitants, and in some instances as many as three persons were affected in one house. At the same time other neighbouring villages, exposed to the same meteorological influences, and in the same geological conditions, were free from the disease. In the village of Becherbach, with 460 inhabitants, Butry observed as many as twenty cases in the course of a few weeks, and no less than nine were fatal. The cases occurred in a small number of families, which were so grouped around those first attacked as to favour the idea of a spread by infection. In most of the cases the prostration was great; in several there were cerebral symptoms, and in five there was jaundice. In seven the apex of the lung was invaded; in five the pneumonia was double; in three there was secondary pleurisy. The spleen was not enlarged in any case.

Kerschensteiner observed 161 cases of croupous pneumonia in a prison at Amberg (Oberpfalz), during the four months January to May. The *materies morbi* appeared to him to be endemic and not transportable. In a district of Norway containing 6000 persons Loberg observed sixty-three cases of pneumonia in 1879, and twelve occurred in a limited region containing only 200 persons. The cases were grouped, several occurring in the same house.

Penkert has recorded an epidemic of forty-two cases, in which he believed himself able to trace an infection from person to person, and Jelley observed a wife to contract pneumonia from her husband, and to communicate it in turn to a sister who nursed her. Similar cases have been noted by Wyman. No instance, however, is more remarkable than that published in our columns by Dr. Daly a year ago, in which six members of one family were affected in the course of three weeks. The rarity and striking nature of these facts, however, may well suggest caution in reasoning from them to the familiar sporadic form of the disease.

Attempts have been made to ascertain whether the contagiousness of pneumonia can be proved by experiments on animals.

Kuhn inoculated seventeen animals with the sputum of a case of "endemic pneumonia." Of the rabbits, two died on the first two days with symptoms of collapse, but in six others fever followed the inoculation, and presented critical oscillations at the end of the fifth or sixth day. Diarrhœa and prostration accompanied the pyrexia. The animals killed between the sixth and tenth day showed pleurisy and hepatization of the lung, lobar or lobular. Five recovered. Kuhn, perhaps too hastily, regards his results as affording evidence of the specificity of croupous pneumonia.

Those physicians who find, with Leichtenstein, the contrast in etiological conditions between the sporadic and epidemic forms of pneumonia too striking to be ignored, and ground for a division of croupous pneumonia into two classes, have endeavoured to establish a clinical distinction between the two.

Scarpari, for example, has lately emphasized the asthenic character of the epidemic form, its association with jaundice, with yellowish fibrinous pleural exu-

dation, the absence of resolution, and the occurrence of changes in liver and spleen similar to those which are met with in acute specific diseases.

Loberg observed the frequency with which several initial rigors marked the onset of his cases, sometimes preceded, for three or four days, by the symptoms of catarrhal fever, and the frequency of jaundice, but he failed to find enlargement of the spleen. Several observers have noted the tardiness of resolution and the frequency with which the apex of the lung suffered.

Kölnhorn, on the other hand, at Weser, observed splenic enlargement to be the rule. It is very desirable that the actual weight of the organ should be noted in all fatal cases.—*The Lancet*, Oct. 28, 1882.

### *The Generalization of Miliary Tuberculosis.*

The elaborate memoir by Prof. WEIGERT, of Leipzig, in *Virchow's Archiv*, May, 1882, deals with one of those collateral questions of tubercular pathology which are for the present apt to be eclipsed by the more startling exploits of the school of germ-finders. In a note appended to his paper, Prof. Weigert handsomely acknowledges that Dr. Koch has proved in the most convincing way that the virus of tubercle is represented by a specific form of bacillus, and he modestly hopes that his own piece of work may not be voted superfluous. "For the theory of the various forms of tubercle," he remarks, "researches of this kind are still decidedly necessary." We should be inclined to add that there can be no theory of tubercle at all, unless it be a theory of the various forms of tubercle; but although we might pursue that line of remark, we shall be better occupied in giving a brief account of Dr. Weigert's observations on "Tubercles of the Veins, and their Relations to Tubercular Infection of the Blood."

The observations recorded in this paper were made at the Leipzig Pathological Institute, and the post-mortem notes are models of thoroughness and precision. In five cases already published, the author had observed tubercles in the veins, and he now publishes ten more. There is only one case on record, besides his own fifteen, in which the implication of one or other vein of the body in the tuberculous process has been proved; but his own experience leads him to think that, for the future, no necropsy of general acute miliary tuberculosis should be regarded as complete unless the thoracic duct and the veins have been looked to. As a practical rule, it is well to begin with the pulmonary veins and the thoracic duct, and then to turn the attention to those veins that run near any old caseous centre. The author has found tuberculous formations most usually in the pulmonary veins, but he has found them also in as unlikely places as the thyroid and supra-renal veins. The discovery of tubercles on the inner wall of one or more veins in a case of acute miliary tuberculosis means, for Dr. Weigert, much more than that the inner wall of the veins has no immunity from tubercles, where the disease is generalized through the body; for him it means that the sudden generalization of miliary tubercles comes from the tubercular spot in the interior of a vein, that this is the source of an infection of the blood, and of the tubercular deposit in all those various organs and parts that stand in a common relation only through the blood-supply. A contrast is sharply drawn between general acute miliary tuberculosis and all other tubercular formations in the body. The former are recent, rapid, and simultaneous; the blood has been suddenly flooded with a considerable quantity of tuberculous poison, the source being a spot of tubercle protruding on the inner wall of some vein. The author only incidentally deals with the origin of the pre-existing tubercles in the body, venous or other; his proper theme is the sudden dissemination of miliary tubercles by the blood, and the infection of the blood is traced to a particular spot of pre-existing or primary

tubercle on the inner wall of one of the veins. It begins to be obvious that the author's facts concerning tubercular spots in the veins require to be valued apart from his interpretation of their significance. But we shall most fairly illustrate the kind of observation, and the author's reading of the same, by a brief summary of his first case.

The case was that of a male aged thirty-six, whose clinical history is entirely omitted. There was acute miliary tuberculosis, as defined for the present purpose, in many organs and parts; but there were also caseous bronchial glands, tubercular ulcers of the stomach, tubercular ulcers of the small and large intestine, tubercular peritonitis, caseous mesenteric glands, a tuberculous ulcer of the lower part of the rectum with nodules like peas or split-peas in the surrounding fat, and a solitary tubercle of the brain, all of which are considered as distinct from the acute miliary tuberculosis. In the author's own words, the latter condition has supervened upon an already existing tuberculosis of the small and large intestine, of the rectum and cellular tissue of the pelvis, as well as upon an older tubercular peritonitis. He will make no essential difference between the tuberculous quality of the formations in the earlier and in the later outbreaks; both are truly tubercular, but he thinks that the dissemination of the acute miliary tubercles requires a special and additional explanation, and he finds it in an irruption of tubercle into the interior of one of the pulmonary veins, the irruption proceeding from a tuberculous bronchial gland adhering to the vein. He considers that tuberculosis of the pulmonary and digestive tracts may be primary, as they are open to the direct action of tubercular poison coming in with the inspired air or with the food. He thinks also that tubercles of the liver, which occur with great frequency even when there is no general dissemination of tubercles by the blood, are due to the absorption of the virus from the intestine by the radicles of the portal vein, and that such absorption may take place directly out of the chyle, and in the absence of intestinal ulceration. Those are the *primæ viæ*, as it were, of tubercular infection; the infection of the blood, and more especially the sudden flooding of the blood with the virus of tubercle, is indirect or secondary, and it is brought about by the formation of spots of tubercle on the inner wall of the thoracic duct or of a vein. Perhaps the reader may fail to see why the virus cannot reach the blood in the subclavian vein by way of the thoracic duct, without tubercles forming on the inner wall of the latter. But the occurrence of such thoracic-duct tubercles, first described by Professor Ponfick, is interesting in itself. Equally interesting is the later novelty of vein-tubercles which we owe to Professor Weigert; and as an explanation of that sudden flooding of the blood with tuberculous virus upon which acute disseminated miliary tuberculosis is thought to depend, Professor Weigert's elaborate research deserves the closest attention and the most weighty consideration.

Pathologists in this country will doubtless now make a point of searching the veins for tubercles, and they will desire to hear what sort of appearances they ought to look for. To take an example: A pulmonary vein is cut open, and, in a branch of the second order, there is observed a broken-down thrombus-like mass extending into a branch of the third order; the peripheral extension of the mass is a smooth, whitish deposit, continuous with the wall of the vein, and it can be followed unbroken into a still smaller branch until it ends in what appears to be the occluded lumen of a minute vein. In another part of the same lung there is a small whitish miliary nodule seated on the inner surface of a vein of the third order. In the other lung of the same case, a branch of pulmonary vein coming from the apex has an elongated deposit on one side of its inner wall, the lumen being entirely free; the deposit is upwards of an inch long, about an eighth of an inch broad, and about a sixteenth of an inch thick, and is smooth on

the surface. The interior of this deposit proved to be caseous; its peripheral layer was somewhat sharply marked off from the free surface of the vein, and was rich in round cells and bloodvessels, in the midst of which tissue lay epithelial-like cells and giant-cells, partly scattered, and partly in well-defined nodular clusters. The deepest part of the deposit contained essentially the same elements. The wall of the vein appeared to traverse the deposit, the deeper portion of which at one end projected back from the vein. Tuberculous lymphatic glands lay close to it, but their tissues were not continuous. In another case the source of blood contamination was found in the supra-renal vein; the vein, on being opened, was seen to contain a polypous mass, nearly half an inch long, attached to the wall by a comparatively small surface, and otherwise hanging free into the lumen, for the most part smooth on the surface, but softened at the summit, the wall of the vein at the point of attachment being thickened and infiltrated with caseous matter, and in relation with a considerable caseous nodule (one of several) in the supra-renal substance. Other cases showed tubercles growing into the wall of the splenic vein, the portal vein, hepatic vein, vena azygos, innominate vein, left internal jugular, thyroid. It is recommended also to keep an eye on the renal, prostatic, and spermatic veins. The difficulties of this kind of post-mortem-room investigation are not to be under-estimated. When one remembers, says Professor Weigert, how often a beginner fails to find the thrombus from which an embolus of the pulmonary artery has come—he says nothing of those beginners who cannot even find the embolus itself—it is not surprising that they, as beginners in the search for tubercles in the vein, should many times have missed them. But those admirable records of the Leipzig necropsies show that the vein-tubercles are often there for those who have the patience and the skill to find them.—*Med. Times and Gaz.*, Oct. 7, 1882.

#### *The Origin and Natural History of Tuberculosis.*

Dr. THOS. E. SATTERTHWAITE gives the following summary of his views as to the origin and nature of tuberculosis:—

1. Tuberculosis is a disease that deserves the name hereditary, for it attaches itself to certain families throughout many successive generations; and it is most apt to attack those members that are deficient in physical vigour, from whatever cause. Proper precautions often enable those that are thus liable to escape it or withstand it successfully.

2. The most distinguishing characteristic of tubercle is the occurrence, in the tissues, of minute, bright, glistening, translucent particles that have been called miliary tubercles, granula, granulations, etc.

3. They are the result of an inflammatory process, because they can be produced by the introduction of mechanical irritants into the system.

4. When these minute bodies coalesce to form larger bodies and undergo a change of colour, they are known as crude or yellow tubercles.

5. Some of them contain the reticulated tissue that has been called adenoid, because it resembles the retiform tissue of lymphatic glands. As the miliary tubercle advances in age, one or more large multi-nuclear foci may be found, either at the centre or periphery of the nodule. Sometimes Schnepfel's epithelioid corpuscles are found, sometimes lymphoid elements, and sometimes fibrous tissue, but no one of these tissue-elements, which all belong to the connective-tissue series, is pathognomonic of tubercle.

6. The lungs and serous membranes are most frequently attacked, and it is here that the natural history of the tubercle is studied to the best advantage. In other regions of the body there may be modifications of the tubercle, so that its distinctive character is difficult to demonstrate.



7. In the gradual development of these bodies they undergo caseous change at the centre, which phenomenon is another marked feature of tubercle. Still, in some instances we have reason to suppose that the miliary tubercle may become organized, and thus a cure result.

8. Tubercles are rarely found without more or less contiguous inflammation that may be classed as a pneumonia or bronchitis. The latter is the *infiltrated tubercle* of Laennec, the *catarrhal pneumonia* of Niemeyer, or the *desquamative pneumonia* of Buhl. The pneumonia may, perhaps, be protective in some instances, serving to wall off a caseous process, thus preventing it from becoming disseminated, or it may eventually itself participate in the same process and lead the way to necrosis of the lung and the production of cavities.

9. Tubercles may be confined to a limited area and a single lobe of the lung, or a single lung, or they may be diffused pretty equally in different organs. Generalized, disseminated, or secondary tuberculosis is the most dangerous and malignant, and is probably due to transmission of the disease by the lymphatics or bloodvessels, usually the latter. In this secondary form the first manifestations are the gray granulations, as they are also in the primary form.

10. Tuberculosis is inoculable, producing its kind if it produces anything, but other substances will also, in a certain number of cases, produce the same apparent lesions; in fact, not only any organic substance that is capable of physical deterioration, but also a variety of non-organic substances.

11. There is some good evidence favouring the theory that consumption is contagious, i. e., that it is capable of propagation by *cohabitation*, or, in other words, close association with persons that have the disease. The number of well-authenticated instances, in the human being, where the origin of the disease can be explained in this way, is sufficient to give considerable strength to the theory. The best evidence on this point is obtained from a study of phthisis in the domestic animals, especially in horned cattle.

12. And yet the morphological differences between their form of phthisis and those of the human being are such as to put us on our guard against forming hasty conclusions from a comparison between them.

13. Nor does it appear that we have good grounds for believing that the meat or milk of phthisical cattle, when taken as food, has ever produced a single instance of tuberculosis in the human being.

14. But we should, none the less, discountenance the sale of such meat or milk, since even if they are not infectious, they are deficient in proper nutritive elements, and for this reason alone should be debarred from sale.

15. And so in the case of bovine virus, though it does not appear that any person has been rendered tuberculous, yet no vaccine virus should be held to be suitable for vaccination purposes unless proper assurances have been given that the animals yielding the vaccine were in every respect free from tubercle, as determined by inspection after slaughtering.

16. Pulmonary tuberculosis and pulmonary phthisis are, in the majority of cases, interchangeable terms.

17. As a natural deduction from the above views attention should be directed chiefly in prophylaxis and treatment, to the vicious constitution which is conceded to be an essential prerequisite of the disease, rather than to a contagion that at best plays only a comparatively infrequent and subordinate rôle.—*N. Y. Med. Record*, Oct. 28, 1882.

#### *Case of Phthisis treated by Residence at High Altitudes.*

At the meeting of the Clinical Society of London, held Oct. 13, Dr. THEODORE WILLIAMS communicated a case of phthisis treated by residence at high altitudes,

the patient having been exhibited at a former meeting of the Society. A medical man, aged thirty, had cough and expectoration of three years' standing, followed by hæmoptysis, wasting, elevation of temperature, and great prostration, and when seen by Dr. Williams in consultation with Dr. Vereker Bindon on August 30, 1881, presented the physical signs of consolidation of the upper lobe of the left lung. After five months' residence at Davos, including a walking tour of seventeen days in the Engadine, during the whole of which period the patient took exercise largely, he gained one stone in weight, and found his strength and power of climbing greatly improved. On first arrival at Davos he had dyspnoea from the rarefaction of the air, but this passed off, and his respiratory powers became greater than previously. On his return, Dr. Williams found an increase in the sphygmometric and other chest measurements, especially in the upper regions of the thorax, and the physical signs denoted the development of emphysema round the old consolidation, and hypertrophy of the healthy lung. Dr. Williams stated that while he ascribed the general improvement of the patient to the dry, pure, antiseptic atmosphere, and the sun's powerful influence, he assigned the arrest of the tubercular changes to the local effects on the lungs of breathing rarefied air, which, by inducing emphysema, caused an expansion of the thorax, at the same time affording a barrier to the encroachment of further infective processes in the organs. With regard to the durability of the good results of mountain climates, Dr. Williams's experience was that, in well-selected cases, one or two winters sufficed to produce permanent arrest of consumptive disease, though in many instances a prolonged stay of at least two years was desirable. Dr. Williams exhibited sphygmometric tracings of similar cases who had resided at Davos and Colorado for several months, to illustrate the enlargement of the chest through breathing mountain air.

Dr. ALTHAUS said that the question raised deserved serious consideration. He had known a case of a young female who was not benefited by the Alpine resorts, but who had improved marvellously in the Colorado. The Colorado springs were 6000 feet above the level of the sea, and other parts (*e. g.*, Elkhorn) of the Colorado were 8000 feet—much higher, therefore, than any valley in Europe. Dr. Solly was quoted to the effect that a prolonged residence was most desirable. Another point of vantage was that this valley of the Rocky Mountains could be lived in all the year round, there was so much sun and so little moisture.

Dr. BROADBENT questioned whether the beneficial effects of high altitudes had anything very special about them. Would not as much good be got out of a sea-voyage, or a residence at seaside resorts, or other places not necessarily of high situation? In other words, is Davos superior to a sea-voyage?

Dr. MACLAGAN wanted to know whether it was the germless atmosphere or the high altitude which effected these good results. He thought that mere removal from bad surroundings—than which nothing could be worse than a general practitioner with much midwifery—was a great factor in procuring the benefit. Further, does expansion of the chest take place in phthisical cases more than in ordinary individuals?

The PRESIDENT could not doubt the benefit of such climates, but how that improvement was brought about was another question. He thought that the term "antiseptic" was unsuitable if "germless" air was spoken of, and preferred to say "aseptic" when speaking of the atmosphere of these regions. Granting this quality of air, he failed to see how that could affect the bacilli already present in the lungs. These would probably develop in spite of such conditions. Ought we not to draw a distinction between dustless and germless? A respiratory medium free from dust must surely be advantageous as getting rid of so much

mechanical irritation. An unsatisfied desire for taking long breaths would lead to increased respiratory efforts, and so to expansion of the lungs and thorax. But it is a question whether this expansion be a benefit unless the increased thoracic capacity be kept up. The President had had practical illustration of the great degree of invigoration which Alpine heights had been capable of imparting in the person of a sexagenarian.

Dr. WILBERFORCE SMITH remarked that the increase in chest-girth might be due to growth of muscle and fat. Probably at high altitudes the liability to intercurrent attacks of slight inflammation was lessened.

Dr. WILLIAMS, in reply, agreed that the climate of Colorado was splendid, but he had a difficulty in persuading his patients to go that distance. Davos was by no means the only mountain resort that gave such excellent results. The proof of the value of such elevated regions in the treatment of consumption was given in the expansion of the thorax and in the diminution of the physical signs of disease. Sea-voyages did good, no doubt, but he had not witnessed such rapid improvement nor such alterations in thorax and lung in cases treated thus. A thorough and clear analysis, microscopical and chemical, of the conditions existing at these high resorts was yet a desideratum. No doubt that increase of thoracic girth was a good sign, and, relatively speaking, so was emphysema, for did it not seem to prevent the spread of the tubercle? Patients who had been treated at Davos and elsewhere maintained their ground and continued to breathe with greater vigour even when they again dwelt at lower levels. It was an established fact which he had verified at Chamounix, that the natives of high regions had a great pulmonary development. Investigations had also been made in other parts of the Alps, Andes, Rocky Mountains, and Himalayas. The old doctrine was probably still true, that these mountain heights strengthened the constitution, whilst the southern climate diminished the occurrence of catarrh; hence he could not agree with Dr. Wilberforce Smith that high altitudes staved off the intercurrent attacks of slight inflammation.—*Med. Times and Gaz.*, Oct. 21, 1882.

#### *The Cephalic Murmur.*

Dr. G. A. GIBSON (*Birmingham Medical Review*, Oct. 1882) calls attention to the nature and causes of what is termed "the cephalic murmur." After a brief summary of the work that has been done by others on this subject, he narrates five cases in which the murmur was present, purposely selecting different diseases, viz., struma, chlorosis, menorrhagia, hæmorrhoids, and carcinoma. The patients were all alike, however, in that they were anæmic. The murmur is of a blowing character, and occurs somewhat later than the apex-beat. It may exist without any coincident cardiac murmur, but it is always associated with a venous hum in the cervical veins. It is most clearly heard over the orbit, the mastoid eminence, and the occipital protuberance. The author points out that "these three situations are closely related to the cavernous sinus, the lateral sinus, and the torcular Herophili." He considers that the murmur is produced by fluid waves in these sinuses, and he explains this as follows: "The internal jugular vein, at its origin and in its upper part, is so closely connected with the internal carotid artery, that the shock of the arterial pulsation is always communicated to it. Hence, in the anæmic state, fluid waves are transmitted upwards to the blood within the cranial sinuses, and cause a murmur in situations where the vibrations come to a focus." As regards the objection that if of venous origin it ought to be continuous, he observes that the ordinary venous hum in the neck is subject to systolic augmentations of intensity, and he is evidently of opinion that we should find the murmur continuous if the bones of the

cranium were better transmitters of the waves of sound; as it is, we only perceive the increased vibrations consequent upon the cardiac systole. The cephalic murmur is always more distinct over the posterior part of the cranium than elsewhere (the orbit excepted), but the relative intensity of the occipital and mastoid murmurs is only occasionally different. In conclusion, he says, "The cephalic murmur entirely depends upon the anæmic condition of the patient, and . . . it is a sign of anæmia."—*Med. Times and Gaz.*, Nov. 4, 1882.

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### *The Diagnosis and Disappearance of Hepatic Cirrhosis.*

Dr. P. K. PEL, in an article in the lately published *Nederlandsch Tijdschrift voor Geneeskunde*, offers some interesting remarks, illustrated by cases, on the diagnosis and the occasional disappearance, real or apparent, of hepatic cirrhosis. After quoting the opinion of Andral as to the obscurity of the symptoms of this disease, Dr. Pel proceeds to observe that the diagnosis rests principally on two circumstances—namely, the phenomena of congestion in the region of the vena portæ, and the presence of a known etiological factor, the use of alcohol. When these two factors coincide there is little difficulty in concluding that hepatic cirrhosis is the cause of the morbid conditions observed; but there are some cases of the disease in which the signs of congestion in the region of the vena portæ are entirely absent, or at least escape clinical observation; and there are also cases where no known etiological condition can be discovered. Again, it is sometimes found that anatomical and pathological investigation has brought to light the existence of liver disease, of which the patient has been unconscious during life; and Dr. Pel adduces a case of this kind. A patient came under his care suffering from pleuro-pneumonia; he had previously enjoyed good health. After the disease had terminated fatally, a post-mortem examination was made, when it was discovered that, besides empyema, there was an advanced condition of hepatic cirrhosis, with enormous development of the œsophageal, coronary, and diaphragmatic veins. The patient declared, and his friends confirmed the statement, that he had never indulged too freely in the use of alcohol. In another case treated by Dr. Pel the patient was suffering from pulmonary phthisis; the abdomen was very painful and distended with fluid and gas, and there was obstinate diarrhœa, but there were no prominent veins on the surface of the abdomen, and the liver and spleen could not be defined. At the post-mortem examination there was found extensive tuberculosis of the lungs and intestines, but there was also typical hepatic cirrhosis. Again, there are cases, though they are rare, of what may be called idiopathic ascites, which may give rise to great diagnostic difficulties. These cases are probably caused by disturbances of the circulation in the vena portæ or its branches, and inflammatory conditions of the peritoneum may be present; and they generally occur in girls at the period of puberty, sometimes in connection with irregularities of menstruation. The most interesting case, however, recorded by Dr. Pel is one where the clinical phenomena of hepatic cirrhosis were well marked in a man addicted to drink, aged forty-nine. In this instance the disease appeared to be in the last stage, and the whole condition of the patient was unfavourable, but nevertheless there was rapid improvement and under abundant diuresis the congestive symptoms disappeared in fourteen days. The subject of the case was a sailor, who had been ill for three months, and the illness began with symptoms of indigestion and irregular state of the bowels, which were sometimes constipated and sometimes too loose; the abdomen soon began to swell, and the legs were œdematous; and from increasing weakness and further swelling of the abdomen he applied for admission into the hospital. His condition for some days was very critical, but after an abun-

dant diuresis a rapid improvement was manifested, the appetite returned, and the dropsical condition of the abdomen and legs disappeared. Against the advice of the physicians, the patient left the hospital, and he was heard of afterwards as having engaged himself as a sailor in a steam-vessel trading to the East Indies. These three cases sufficiently prove how difficult the diagnosis of hepatic cirrhosis may be during life. In the first case no suspicion of the disease existed, and in the second the symptoms led to error from the great pain in the abdomen and the coincidence of extensive tuberculosis of the lungs and intestines. The third case, notwithstanding long and careful observation, also presented great difficulties dependent upon the relatively successful termination of the disease. It shows that a great accumulation of fluid in the abdomen, together with congestion in the vena portæ, although the case be one of extreme danger, may disappear spontaneously and in a short time under an improved condition of the general health.—*Med. Times and Gaz.*, Nov. 18, 1882.

#### *Absence of Albuminuria in Bright's Disease.*

Absence of albumen from the urine in cases of advanced Bright's disease is, as is well known, not uncommon; and cases have even been recorded where no albumen was observed during life. It is not common, however, for the urine of a patient, long under exact observation in hospital, to show no evidence of disease by the ordinary tests till eight days before death, and yet for the *post-mortem* examination to show that the kidneys were so atrophied that only a seventh part of their substance was functional.

The patient, a female, aged 48, was for over three months in the Breslau Hospital, suffering from general dropsy and bronchitis. Mitral insufficiency, with hypertrophy of the heart, was diagnosed, but was not considered enough to account for the symptoms. Signs of kidney-affection were carefully looked for, but not found, the urine being of normal colour and quantity, acid, 1,020, without albumen or abnormal constituents. Eight days before death, the urine diminished in quantity, in colour it was clear brown-red, of specific gravity 1,023-1,025. It contained albumen, hyaline casts, and white and red blood-corpuscles in moderate number. Dr. Schuehardt records the *post-mortem* appearances as observed by himself (*Berl. Klin. Woch.*, 1882, No. 41). There were complete atrophy of the right kidney (76 grains), and of great part of the left, with interstitial and parenchymatous nephritis of the rest of the left kidney (635 grains); dilatation of the heart, with hypertrophy of the left ventricle and fatty degeneration of the heart-muscle; chronic endarteritis of the aorta and other large arteries, including the renals; pleurisy, and lobular pneumonia. Microscopic examination showed the usual appearances of granular contracted kidney, only a small part of the left kidney showing comparatively healthy urinary tubules and glomeruli. There was no trace whatever of recent inflammation in the right kidney or in great part of the left, but in the remaining part of the left kidney the interstitial tissue was thickly infiltrated with small cells, and the epithelium was in a condition of fatty degeneration.

Dr. Schuehardt considers that this case strongly supports Heidenhain's theory as to the action of the different portions of the kidney in the separation of the urine from the blood. Heidenhain asserts, and gives experiments to prove, that the separation of the water and salts of the urine occurs in the glomeruli, while the specific urinary constituents are secreted by the action of the epithelium of the urinary tubules. He explains the absence of albumen in healthy urine, although secreted from an albuminous fluid, by the presence of the complete epithelial covering of the glomeruli. In the fact that a seventh part of the normal

renal substance could secrete the normal amount of urine indistinguishable from healthy urine, Dr. Schuchardt sees a proof that the separation of urine is not a simple filtration, as Ludwig holds, but a secretion by a tissue, part of which can, in compensation, take on increased function. He points out also that the albumen appeared in the urine eight days before death, coincidently with an alteration in the nutrition, and, therefore, of the structure of the epithelium covering the glomeruli of the comparatively healthy part of the left kidney.—*London Med. Record*, Nov. 15, 1882.

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### *The Mal del Pinto.*

Under the name of the *mal del pinto*, or spotted disease of Central America, Dr. IRYZ has recently described a rare, but very interesting form of skin-disease, which has hitherto escaped the notice of pathologists. Dr. Iryz's observations are based on a study of the disease, during a four years, in certain districts of Central America and Southern Mexico. In these regions, the affection is always more or less endemic; but it does not appear to exist elsewhere. So far, its existence has remained unnoticed in any of the standard works on nosology. An exception should possibly be made to this statement so far as Littré and Robin's edition of Nysten's *Dictionary* is concerned, in which work, under the name of *carrate*, reference is made to a malady apparently similar to the *mal del pinto*, or "spotted disease" of Central America. The authors, however, evidently had few data to go on, and have treated the subject in a very cursory and inaccurate manner. Dr. Iryz has embodied the results of his observations in a very complete and exhaustive monograph, which he has recently submitted to the Academy of Medicine of Mexico. This memoir is quoted at considerable length in the *Independencia Medica* of January, 1882, a Mexican journal, from which the following remarks are taken.

The *mal del pinto* is a skin-disease, characterized by abnormal pigmentation, accompanied by pruritus and desquamation, and by a characteristic odour. It may commence as a patch of discoloration on any portion of the general integument. The discoloration is followed by itchiness and desquamation. The characteristic eruption radiates from several centres, and may either continue discrete, or, as in some cases, become in its later stages confluent. The general health suffers little, and there is no constitutional disturbance, except from the continuous itchiness, which is always more severe at night. The affection appears under four distinct forms, namely, the black, the blue, the red, and the white. In the two former, the pathological process is apparently superficial to the dermis; in the latter, it involves the whole of the true skin and rete mucosum. Hence, from these anatomical characters, all cases may be grouped as either epidermic or subepidermic. In the former, the eruption appears indiscriminately on all parts of the body, with the exception of the soles of the feet and the palms of the hands. The patches of discoloration, which may be either black or dull blue, are circumscribed and slightly elevated above the surrounding skin. At first, the affected surfaces are dry and rough, but, later on, they become moist, and exude a glutinous secretion. All signs of inflammatory action are absent, and pressure causes neither pain nor change of colour. When the process of desquamation has reached its limit, the skin of an individual assumes the appearance of a mosaic pavement, composed of various colours. Not uncommonly, black is the prevailing tint, in which case the patient has very much the appearance of a negro, with an Indian or Caucasian type of face. In the later stages of the disease, a tuberculous eruption is often developed. In the blue variety, the discoloration is very similar to that caused by grains of fine

powder lodged under the skin. It may be associated with patches of black or other altered pigmentation. Whatever the discoloration may have been in the first instance, it always remains unaltered, and is not displaced or succeeded by any other tints.

The subepidermic form of the *mal del pinto* may appear as patches of a dark red, pink, or brilliant white colour, like cicatricial tissue. The white patches are generally bordered by a dark ring, as though the colour had passed from the centre to the circumference. When touched, these patches convey a different sensation from the neighbouring healthy skin. The integument is hard and apparently condensed, and has lost, in great part, its faculty of sensation. The capillaries have also undergone diminution and destruction. Pruritus is constantly present, but desquamation is less abundant than in the black or blue forms. As a general rule, the patches are uniform in colour, but occasionally they present islets of pigment in their centres, as if this substance had, in some places, escaped destruction. It is not uncommon for the disease to spread from several centres, each distinct in colour. These centres become eventually more or less confluent, and impart to the whole body, or to a limb, a very singular and characteristic appearance. In such cases, the aspect of the face becomes peculiarly repugnant; and this, in conjunction with the specific and disagreeable odour of the disease, which has been compared to that of mouldy garments, sufficiently accounts for the dread and detestation it excites in those communities in which it is endemic.

The *mal del pinto* may sometimes commence in a portion of integument which has hitherto been perfectly sound. It more usually, however, follows some general eruption, such as herpes or eczema. Its course is essentially chronic. Sometimes a patch of discoloration will remain indolent for months, neither advancing or receding. This is especially true of the white form. The black and blue forms, on the other hand, exhibit much greater activity, and spread both more quickly and more widely. One case, however, came under Dr. Iryz's notice in which complete albinism had been produced, the head, neck, thorax, limbs, and even hair of the patient, having become as white as if they had been dusted with flour.

The diagnosis of this peculiar affection presents but little difficulty. In well-marked cases, it has only to be seen to be recognized. No other known skin-disease gives the same mottled or piebald appearance to the body. No other possesses the same characteristic odour, or exhibits the same furfuraceous desquamation.

In the earlier stages, however, the characteristic discoloration is absent, and then the dark patches may simulate Addison's disease. They are, however, darker and better defined, and there is also an absence of all constitutional symptoms. From ordinary chloasma, they may be distinguished by their roughness to the touch, by the pruritus and desquamation, and by the tendency they have to spread. From pityriasis nigra, they may be diagnosed by their more uniformly dark tint; and, in the later stages, by the presence of tubercles. The blue patches are like nothing so much as gunpowder lodged under the skin, but the history of the case will at once eliminate this source of error.

On the white form of the disease, especially at its earlier stages, the distinction between it and vitiligo is not always easy. Both affections exhibit a similar series of dull or bright white patches encircled by a line of desquamation. In the affection we are considering the pallor is, however, as a rule, much more marked than in vitiligo. Neither heat, blisters, canterization, nor bruising can alter or remove, even momentarily, the peculiar whiteness of the skin, the

capillaries of which have probably in old standing cases been completely destroyed.

The prognosis, so far as life is concerned, is favourable. The *mal del pinto*, in fact, causes but little constitutional disturbance at any period of its history. It is, however, very fatal to personal beauty, inasmuch as the pigmentation of the skin is nearly always permanent. If left to itself the affection will spread over the whole body, though it occasionally stops short of this, and even, in very rare instances, would seem to be capable of spontaneous cure. The white variety is, probably, in all cases incurable.—*Brit. Med. Journ.*, Nov. 4, 1882.

## SURGERY.

### *Extirpation of the Larynx.*

A. LANDERER (*Deutsche Zeit. f. Chirg.*, xvi.) reports the following four cases as having occurred in the clinic of Prof. Thiersch.

1. Carcinoma of the larynx in a man aged 36 years; tracheotomy on Sept. 27, 1879; laryngotomy and partial extirpation of the carcinoma on Feb. 3, 1880; total extirpation of the larynx on Feb. 26, 1880. Discharged, cured, on April 19th. The subsequent history shows that no return of the disease had occurred within eighteen months.

2. Carcinoma of the larynx in a man aged 52 years; tracheotomy on March 2, 1880; extirpation of the larynx on April 15. Cure lasting for seventeen months.

3. Carcinoma of the larynx and pharynx in a woman aged 45 years; tracheotomy on Oct. 17, 1880; extirpation of the larynx and pharynx on Nov. 10, 1880. Fatal relapse on March 16, 1881.

4. Carcinoma of the larynx and pharynx in a woman aged 57 years; tracheotomy on Dec. 9, 1880; extirpation on Jan. 17, 1881. Death on Jan. 24, 1881, from secondary pneumonia, without impaction or metastasis.

It is seen by these cases that Thiersch always precedes extirpation of the larynx by tracheotomy, as by this means it is rendered possible to improve the strength of the patient by increased administration of food and greater freedom of respiration, to combat any septic bronchitis, and above all to fix the trachea to the skin and prevent infiltration of pus by peritracheal inflammation. A great advantage is also gained by accustoming the tracheal mucous membrane to the contact of the canula and to the irritating influence of direct respiration. It is also recommended to open the trachea as low down as possible below the thyroid isthmus, so that the tracheotomy wound will not be interfered with by the incisions necessary for the extirpation.

In the details of the operation, Thiersch follows Billroth and Gussenbauer, laying especial stress on the advisability of leaving the epiglottis when it is unaffected by the disease.

The wounds were treated open, without sutures, while nutrition was carried on through a permanent œsophageal sound introduced during the operation; after about two weeks the patients learned to swallow soft food, though they were not able to swallow fluids until some time later. Thiersch recommends that the head should be kept depressed during the after-treatment so as to prevent burrowing of pus and secondary pneumonia, the complication which proved fatal nine times out of eleven cases of death in twenty-eight operations.—*Centralbl. f. d. Med. Wissen.*, Sept. 23, 1882.



*The Operative Treatment of Caseating Glandular Swellings.*

Dr. L. VON LESSER, of Leipzig, in an original contribution to the *Centralbl. für Chir.*, No. 22, 1882, on the treatment of enlarged and caseating lymph-glands, states that, in consequence of the unsatisfactory results in such cases of external applications, and, also, of parenchymatous injections of Fowler's solution, and of solutions of carbolic acid, he was led to remove such swellings with the knife. In a large series of cases, and in many regions of the body, but particularly in the neck and about the lower jaw, masses of swollen lymph-glands were so completely removed, that no remaining diseased glands could be seen in the wound, and the sheath of the large vessels at the seat of operation was often freely exposed. Notwithstanding the extent of the wound, in many of the cases that were thus treated, the healing generally took an aseptic course, and there was not any necessity in most instances for the patient to keep to his bed. In the majority of these cases, a permanent cure was attained; that is to say, the cicatrix of the wound remained sound, and no fresh glandular swellings formed around the seat of operation. The general condition of the patient, in each of these favourable cases, improved in a remarkable manner. In other cases, on the other hand, the cicatrix lasted but for a short time. It remained red and swollen, and, after a short interval from the date of operation, usually about three weeks, it broke open, and gave exit to a discharge from the wound of caseous material. Such a result was observed even in those cases in which, during the extirpation of the diseased glands, no portion of the caseous material itself was allowed to come in contact with the surface of the wound, the diseased glands having been removed *in toto* without any preliminary disturbance of the cheesy deposit. In these cases of fistulous condition of the wound, a decided cure was not effected until after repeated removal, by scraping, of the renewed cheesy deposit. In a third set of these cases of extirpation, the wound healed, and its cicatrix afterwards remained sound, but about the wound a fresh mass of swollen and diseased glands was speedily formed. Dr. Lesser had recently an opportunity of observing a case in which, after an injection of a 5 per cent. solution of carbolic acid into an enlarged and degenerated suboccipital gland, the skin over the gland became perforated, and the caseous deposit was discharged through this orifice, as in a case of spontaneous elimination. In this instance there was a speedy healing, with the formation of a small round and smooth scar.

This result led Dr. Lesser to try subcutaneous "scooping out" of the caseating glandular swelling, instead of resorting to extirpation. In this plan of treatment, the superficial caseating gland is fixed between two fingers of the operator's left hand, and a sharp and narrow knife is then thrust through the skin into the diseased glandular structure. Through the small wound thus formed, a small sharp spoon is introduced into the gland, and the caseating mass is broken down, and afterwards removed, partly by the use of the spoon, partly by being pressed out through the small wound in the skin. The broken-down substance of several glands may thus be removed through one opening. But very little bleeding, it is asserted, occurs during this operation, and Dr. Lesser has never observed any resultant effusion of blood beneath the skin. It was at first feared that in this plan of treatment further infection might be set up through the presence of remaining portions of caseous material in the subcutaneous and circumglandular connective tissue. It is stated, however, that no indications of either general or local infection were observed in any of the cases in which Dr. Lesser applied this treatment. Unless the operation be carried out with attention to the details of the antiseptic method, with disinfected hands and instruments, the use of the

spray, and the subsequent application of antiseptic dressings, it is liable to be followed by circumglandular phlegmon. It is not considered necessary to administer an anæsthetic during the operation, except to children and feeble subjects, when several punctures have to be made at the same sitting.

In dealing thus with glands that are quite superficial, a light antiseptic dressing is all that is needed during the after-treatment; but, when the sharp spoon has been passed deeply into the tissues, a small drainage-tube, it is recommended, should be passed through the opening in the skin, and be retained during the first three or four days. Dr. Lesser holds that this method of scooping away caseous lymph-glands is preferable to extirpation. It is a much less severe treatment, and need not prevent the patient from continuing his occupation. The disfigurement is considerably less. There is certainly this objection to the "scooping out" plan, that, as all the glands at the seat of operation cannot be seen, some glands that are diseased may remain undisturbed. But, as is well known, complete extirpation of a mass of diseased glands does not protect the patient against future swelling of neighbouring glands, or caseous infiltration of the wound.—*London Med. Record*, Oct. 15, 1882.

#### *Clinical Characters of Tubercle in Bone.*

MR. W. S. SAVORY, F.R.S., draws attention to the many striking points of analogy there are between the progress and effects of tubercle in lung and in bone. In the first place the cancellous texture of bone, which is the seat of tubercle, resembles broadly in physical characters the parenchyma of lung. A section of cancellous bone and a section of dried lung have to the naked eye a very general resemblance. The structure of both is aptly described as sponge-like, and this resemblance is drawn more closely when a mass of yellow tubercle occupies the substance of each. In both cases the spongy texture appears to be filled up and rendered solid by the infiltration of the caseous deposit. Then, too, the resemblance further appears in the halo of inflammation or increased vascularity of varying width which so often surrounds the mass. Still further is the likeness shown in the mode in which the tubercle degenerates. The included tissue is broken down and destroyed until, either by the escape or disappearance of the tubercle, a cavity is left in the cancellous bone corresponding very remarkably to a vomica in the lung. Furthermore, the likeness is extended by the relation of cancellous bone to a neighbouring joint and the relation of lung substance to the pleura. Just as pleurisy is so often set up by the disturbance of tubercle in the lung, so synovitis is often provoked by the disturbance of tubercle in adjacent bone; and just as empyema is sometimes produced by the perforation of the lung-wall and the escape of matter into the pleural cavity, so suppuration in a joint, which is too often destructive, is due to the perforation of the articular wall of bone and the escape of matter into the synovial cavity. In either case urgent symptoms are apt to supervene suddenly on comparatively latent mischief.

Then the variable progress and effect of tubercle in the lung are oftentimes repeated with singular resemblance to bone. Just as in lung, so in bone; the history of tubercle is sometimes that of a single formation, which passes steadily, with more or less rapidity, to destruction; sometimes that of several smaller ones simultaneously; sometimes, though this more rarely, that of a number of successive formations which pass through their stages one after another, leading in this way to a gradual extending destruction of osseous tissue. So, again, and in this I think the resemblance is most marked of all, there are in tubercle in bone phenomena very exactly corresponding to what Dr. Latham in the lung, and in the cervical glands as a more obvious illustration, has described

as cases of mixed and unmix'd phthisis. In one class, during the changes which tubercle, after its formation, is prone to undergo, there is only what may be called a necessary amount of inflammation excited in the surrounding texture, such as is just sufficient to accomplish the result of softening and expulsion, and which subsides as soon as that is effected. This Dr. Latham called the specific limit of the disease. In another class the inflammation provoked spreads widely and deeply beyond this, and becomes much more severe and extensive than is needful for the mere elimination of the tuberculous matter. In short, Dr. Latham's sketch might have been drawn from a study of tubercle in the head of the femur or tibia or in the tarsus or vertebræ.—*Lancet*, Nov. 4, 1882.

#### *Total Excision of the Sternum.*

At the recent Congress of German Naturalists at Eisenach, Prof. KÆNIG reported the following unique case to the Surgical Section. A woman had been treated by several physicians for more than two years for a sternal tumour which, without being excessively painful, gave great uneasiness from its steady increase in size. When Prof. Kœnig saw the case the tumour was as large as a child's fist, was moderately hard, clearly arose from the sternum and passed laterally into the ribs; it was sarcomatous in nature. Experimental excisions of the sternum made on rabbits showed that it was extremely difficult to avoid opening the pleuræ and pericardium, and that the mammary artery could only be ligated after removal of the bone.

The operation on the woman consisted first in the division of each rib (these were still cartilaginous at the points of union), the first five being divided on a curved director passed beneath them, the remainder by free incision, after exposure; a slight opening was made accidentally in the right pleura, which was stopped as soon as possible with antiseptic gauze. On further dissecting, it was found that the pericardium was adherent to the tumour, and it was accidentally torn, as was also the left pleura. In spite of these openings the patient was only dyspnoëic for a few moments. The wound was then closed after removal of the sternum and dressed antiseptically with iodoform. The patient did well at first, but became extremely feverish on the 6th day, which condition was, however, reduced by means of digitalis. The dressing was not disturbed for twelve days, when it was found that part of the skin had sloughed, and that the heart was bathed in pus. Improvement was then steady, and the patient was shown to the Congress with the wound entirely healed.—*All. Wiener Med. Zeit.*, Sept. 25, 1882.

#### *On Wounds of the Heart and their Curability by Suture.*

In wounds of the heart, death is usually due to asphyxia, caused by escape of blood into the pericardium, to hemorrhage, to the destruction of the cardiac ganglia, or to obliteration of the coronary arteries. To the dread naturally felt of opening the thoracic cavity is attributed by Dr. BLOCK, of Dantzic (*Gaz. Méd. de Strassburg*, October 18, 1882), the death of many cases of wounds of the heart in which asphyxia could have been prevented by simple incision of the pericardium, or hemorrhage prevented by a simple suture, and Dr. Block has undertaken to demonstrate—in a series of experiments made upon dogs and rabbits—that suture of wounds of the heart is a simple operation and only requires three or four minutes for its performance.

Four experiments on rabbits showed that both thoracic and pericardial cavities could be opened for a short time with impunity. An opening of the right and left ventricle, as well as entire compression of the heart for the application of sutures, can also be supported by animals for a few minutes, and he presented a

dog in a good condition of health in which there had been a wound of the cardiac muscle with opening and suture of the three thoracic cavities.

In order to prevent escape of blood in the application of the sutures, the heart is to be seized at the apex and drawn forward until pulsation and respiration cease (the animal not being necessarily killed by this procedure), or the traction on the heart can be made only sufficiently strong to arrest the escape of blood from the wound. The wounded tissue can be then ligated or sutured.—*Journ. de Méd. de Paris*, October 28, 1882.

#### *Traumatic Hæmato-pericardium.*

Dr. G. TILLING (*St. Petersb. Med. Woch.*, No. 22, 1882) relates the details of a case of effusion of blood into the pericardium after an injury, by which the chest had been severely squeezed without fracture of ribs or sternum. The only external evidence of injury was a small tender swelling on the right border of the middle piece of the sternum, and a painful spot under the right clavicle. Slight hæmoptysis followed the injury, but did not last long. The cardiac dulness was found to extend over the right border of the sternum; the apex-beat could only just be felt, but not localized. The heart-sounds, on auscultation, were masked by a variety of sounds, blowing, rubbing, and splashing, except in the second intercostal space, where the sounds were clear. Diffuse *râles* were heard over both sides of the chest, and at the base of the right lung there were deficient breathing, fine crepitation, and slight dulness. No indications of ruptured lung or of emphysema were present, although the peculiar splashing sound heard over the heart would seem to indicate a partial pneumo-pericardium.

A similar sound has, however, been recorded by Morel-Lavallée, as having occurred in a case of hemorrhage into the pericardium, in which no trace of air could be discovered on *post-mortem* examination. On the third day after the injury, the rubbing and splashing sounds disappeared, and the cardiac dulness increased upwards; but the apex-beat could be clearly made out in the fourth intercostal space. The dulness then gradually diminished, and the cardiac signs became normal in about three weeks.

Dr. Tilling, in referring to the literature of the subject, points out the rarity of cases of injury to the pericardium alone, without any fracture on the one side, or damage to the heart on the other. Of one case recorded by Billroth, he says that, "pericarditis occurred after a blow in the cardiac area, but the presence of a hæmato-pericardium was not mentioned." He does not, however, attempt to explain the reasons for his diagnosis of hæmato-pericardium in the case here recorded.—*London Med. Record*, Nov. 15, 1882.

#### *Cases of Gastrostomy.*

Dr. O. KAPPELER, of Munsterlingen, reports, in the *Deutsche Zeit. für Chirurgie*, Band xvii. Heft 1 and 2, a case of impermeable carcinomatous stricture of the œsophagus, in which he performed gastrostomy. The patient was a man aged 69, who had suffered during the previous three months from much difficulty in swallowing, and at last found it quite impossible to take even fluid nourishment. When first seen by Dr. Kappeler in October, 1881, this man was anæmic and much emaciated, suffered much from thirst, and was constantly troubled by a profuse discharge from the mouth of saliva and mucus. During the first four days of the treatment, fluid food could be introduced into the stomach through a narrow tube, passed through a long stricture with rough and hard walls in the lower half of the œsophagus. At the end of this period the stricture became quite impermeable, fluid could not be swallowed, and it was found impossible to pass even a very small tube.

On October 24th, gastrostomy was performed, with attention to all antiseptic precautions, and in a room heated to 54 deg. F. The incision in the abdominal wall was about three inches and a half in length, and, commencing about half an inch below the level of the xiphoid cartilage, was carried downwards along the course of, and at a distance of two fingers' breadth from, the margins of the costal cartilages on the left side. The stomach was found without difficulty, and the anterior surface of the viscus was stitched to the edges of the superficial wound by twenty-four catgut sutures passed between the muscular and mucous gastric coats, and not perforating the latter. On October 28th, the stomach having contracted adhesions with the abdominal wall, an opening was made into the stomach large enough to admit a gum-elastic tube of the thickness of a finger. No bad symptoms occurred that might be attributed to the operation, but for a few days the patient remained in a condition of extreme exhaustion, and much difficulty was experienced in supplying nourishment by the stomach, in consequence of the regurgitation of the fluid food through the large artificial opening. This difficulty was overcome after a time by introducing a large tube, and subsequently by using a specially contrived retentive apparatus; and then the patient was frequently supplied with milk, pancreatic preparation, and wine. On November 5th he was able to move about, and during the next ten days improved much in health and gained in weight. On November 16th, however, he suddenly presented symptoms of mischief in the lungs, and five days later death resulted from dyspnoea and exhaustion.

At the necropsy the œsophagus was found to be completely blocked by a large mass of epithelioma, the lower margin of which was situated at a distance of about two inches and a quarter above the cardiac end of the stomach. A portion of this growth communicated directly with the inferior lobe of the right lung. This lobe was studded with small abscesses, and deposits of soft and pale structure. Several small abscesses were found in the upper lobe of this lung, and also in the lower lobe of the lung on the left side. The author, in his comments on this case, particularly directs attention to the facts, that before the operation the stenosis of the œsophagus was so complete, that not a drop of fluid could be forced down through the obstruction; that, in consequence of commencing ulceration of the carcinomatous growth, it was found inadvisable to continue the use of the bougie even with the patient in a condition of anaesthesia; and that, in spite of systematic feeding by the large intestine, the patient rapidly lost strength and became so exhausted as to render doubtful the prospects of any operative treatment. Notwithstanding these unfavourable conditions, the gastrostomy had such good results, that the patient's life was prolonged for some weeks, and his condition during this period was rendered more tolerable.

In cases of cancerous stenosis of the œsophagus, gastrostomy, it is held, should not be performed until a late stage of the disease; since, as the operation under such circumstances is merely palliative, and considering the results that have hitherto been attained from its performance, so long as food can be passed into the stomach, even in small quantities, no surgeon would be justified in establishing a gastric fistula, and no intelligent patient would submit to such a proceeding, which, though it might relieve some troublesome symptoms and postpone death for a short time, would certainly not prevent this result. There can be no doubt, however, that, as the risks of this operation have now been reduced to a minimum through improvements in the treatment of wounds, it may be justifiably performed in cases of complete or almost complete cancerous stenosis of the œsophagus, in which starvation is imminent. In the most favourable cases for such treatment, the patient is not likely to survive the operation for more than forty days.—*London Med. Record*, Nov. 15, 1882.

Mr. R. H. BOURCHIER NICHOLSON reports the case of a seaman, aged 69, who had good health up to three months ago, when he first experienced difficulty in swallowing; could only take small quantities of fluid, and that with much pain and frequent sickness; losing weight rapidly.

May 1, 1882, he could not pass the smallest-sized bougie; recommended gastrostomy; and performed the first stage of the operation on May 14th, under ether—strict antiseptic precautions being used. He made an incision three inches long, three-fourths of an inch on the inner side of the ninth and tenth left costal cartilages; passed two long silk ligatures through the peritoneal covering, three-fourths of an inch apart (as recommended by Mr. Bryant); and stitched the stomach to the abdominal walls with twelve silver wires. The wound was dressed with terebene and olive-oil (1 part to 3); then a pad of salicylic silk, covered with jaconett, etc. A suppository of half a grain of morphia was given. Temperature 99°; pulse 96. He had no pain; and passed urine. He was fed by enemata of four ounces of beef-tea, with ten minims of tincture of opium every three hours, and a beef suppository night and morning.

May 21st. Temperature 97.4°; pulse 84. He had kept up well, retaining the bulk of the injections. Three weeks later he finished the operation by passing a tenotomy-knife into the stomach, between the silk ligatures left in the first stage of the operation, making an opening one-eighth of an inch wide. He injected, through the œsophageal tube (the size of No. 6 catheter), four ounces of warm milk, and repeated it at 8.30 P. M. The injections by the rectum were continued. Two patches of ecchymosis appeared above the wound.

July 6th. He died, having lived seven weeks and four days after the operation.

At the necropsy, the stomach was found healthy. The stricture of the œsophagus was almost impervious, just above the entrance to the stomach.—*Brit. Med. Journ.*, Oct. 28, 1882.

#### *An Unexpected Occurrence after Resection of the Pylorus.*

On Jan. 3d CARL LAUENSTEIN (*Centralb. f. Chirurg.*) excised the pylorus in the case of a lady who had suffered from a tumour in that region since Feb. 1881. The case is rendered interesting by a failure in the diagnosis and the strange cause of death. The patient, aged 34, was married and had had three children. She had never been confined to bed by any serious illness. On examination, a tumour the size of the clenched fist was found in the umbilical region; its lower border was excavated, and the points of the fingers could be inserted into the notch. The growth was movable from side to side, this manœuvre being accompanied with but little pain. No symptoms characteristic of pyloric stenosis were present. On making an incision in the linea alba over the centre of the tumour a dense, flesh-coloured mass was laid bare, with several large veins coursing longitudinally over its surface. Some glandular masses were adherent to the lower margin of the growth, and on the latter being drawn forward it was recognized as the pyloric portion of the stomach, and its excision was duly proceeded with. The great omentum was first separated, numerous ligatures being applied, and then the tissues divided between them. It was at this stage of the operation that it was found that the connection between the great omentum and the stomach was not limited by the line of the great curvature, but extended on the posterior wall almost as far as the line of the lesser curvature. Hence the great number of ligatures which were found necessary to arrest bleeding after the surface of the greater curvature had been cleared for a good finger's-breadth above the palpable induration. The transverse colon was disinfected with a 2 per cent. solution of tartarætic fuller's earth (*Weinsäurer essigsäurer Thonerde*) and replaced in the abdominal cavity. The lower portion of the parietal wound was closed with a

provisional suture, so that no small intestine was visible during the whole of the operation. Entrance of fluid into the abdominal cavity was prevented by means of sponges. No spray was used. The small omentum was then separated with some difficulty, but little loss of blood. The pyloric portion of the stomach was now raised, and an incision having been made in it, the contents of the viscus were expressed through the opening. The tartaric solution was again employed as an antiseptic. The stomach was then incised with scissors (in healthy tissue) from the lesser towards the greater curvature to an extent corresponding to the apparent diameter of the duodenal lumen. Meanwhile the stomach was compressed in its middle third by the hands of an assistant. The pyloric portion was now completely separated with the scissors, and hemorrhage having been arrested, the duodenal and gastric edges were brought into apposition and united by suture. The sponges were withdrawn, the operative area was disinfected, the abdominal wound closed, iodoform powder sprinkled on the surface, and a Lister's dressing applied over all. There was no attempt at drainage. The operation lasted five hours, much time being spent in the careful division of adhesions and the application of the various sutures. The extirpated portion of the stomach on the side corresponding to the greater curvature measured 4.8 inches, on that corresponding to the lesser, 3.9 inches, and weighed (after lying in spirit for several days) about  $9\frac{1}{2}$  oz. (295 grams). Microscopical examination showed that the tumour consisted of cells closely resembling white blood-corpuscles; of cancerous tissue there was no trace. There was favourable progress made for five days after the operation. The patient, though very weak, was perfectly sensible, and remained so till her death. On the first day ice and a teaspoonful of champagne every half hour were administered, but later on doses of ext. carnis recens parat., beef-tea, and port wine were given by the mouth. Nutrient enemata were also employed. The abdomen was lax and free from pain. On the sixth day matters changed for the worse. The abdomen became disturbed, pain was incessant, temperature, pulse, and respiration rate all rose, the tongue became covered with a brownish fur, and the patient died at 6.30 on the morning of 10th January. Although no regular autopsy was allowed, permission was given to re-open the abdominal wound. It was found that the edges of the pyloric gastric wound were still held by the sutures in perfect continuity with those of the duodenal tube; but a *large portion of the transverse colon was gangrenous*, and secondary peritonitis had resulted. All the other pelvic and abdominal viscera were normal. The question arises, How was this unexpected, and, in similar cases, unobserved, gangrene induced? Further experience is doubtless necessary to clear up the matter. In this particular case it is noteworthy that, besides the connection of the greater curvature with the gastro-colic ligament, adhesions of a very firm and dense description were found involving the posterior wall almost as far as the lesser curvature. Perhaps the weight of the tumour, which during life had greatly strained and displaced the stomach, had caused the development of these abnormal adhesions between the posterior surface of that viscus and the transverse meso-colon. The division of these adhesions during the operation, and perhaps the accidental implication of other vessels going to supply the portion of gut in question, together with the want of a sufficient collateral circulation, had led, in all probability, to the gangrene which brought the case to a fatal termination.—*Edinb. Med. Jour.*, Nov. 1882.

#### *Extirpation of the Gall-Bladder.*

The medical treatment of the formation of calculi in the gall-bladder has as yet been limited to generally vain attempts to prevent their formation, or to

cause their solution when formed, by the administration of various drugs; while surgery has simply attempted their removal and the establishment of a biliary fistula, whose rapid closure is again generally attended by the re-formation of calculi. Dr. CARL LANGENBUCH has indicated a method, whose feasibility he demonstrates by a successful case, of obtaining a radical cure in cases of this disease; he proposes the extirpation of the gall-bladder in the following manner: An incision is made in the right hypochondrium, parallel to the lower border of the liver, and joined by a second incision running along the outer border of the right abdominal rectus muscle. The abdominal cavity being thus opened, the transverse colon and the small intestines are pushed down by a large sponge, and the liver elevated, so as to bring the hepatico-duodenal ligament into prominence. The gall-bladder is then easily separated from the liver by a few strokes of the knife, and the cystic duct laid free and ligated in two places with silk threads; catgut should not be employed. Of course, great care must be taken to avoid wounding the liver; the wound in the abdomen is then closed and the operation completed. The case on which this procedure was practised was that of a man, aged 43, who for fifteen years suffered from calculous formations in the gall-bladder. The most recent symptoms pointed to the formation of a calculus in the gall-bladder too large to pass through the cystic duct, and, as his suffering constantly increased, he consented to the performance of this operation. The bladder was consequently extirpated in the manner above described, under strictly antiseptic precautions. The principal complaint of the patient in the after-treatment was that he did not get sufficient to eat, and healing, somewhat complicated by a slight *pleuritis sicca* which lasted one day, was completed in less than two weeks. His general health has since then greatly improved; he has gained fifteen pounds in weight in six weeks; has no pain, and has entirely given up the use of morphia, which, before the operation, had been constantly required in large quantities.—*Berliner Klin. Woch.*, Nov. 27, 1882.

#### *The Result of Ligature of the Ductus Choledochus.*

BELOUSSOW (*Arch. f. Exper. Path.*, vol. xiv. p. 200) studied this subject under the direction of Cohnheim and Weigert. He experimented upon rabbits, guinea-pigs, and dogs. The longest time that any animal survived was eighteen days.

The liver was jaundiced and slightly enlarged. In its substance were seen yellowish-gray spots varying from the size of a pin's head to a pea. These were most numerous from the first to the sixth day. The microscopic examination showed them to represent a partial necrosis of the liver substance caused by the pressure of the bile. Around these nodules appeared a zone of reactive inflammation with the formation of young connective tissue in which were newly formed gall-ducts. This new tissue gradually replaced the necrotic portions entirely.

In this way is to be explained the cirrhosis of the liver observed by earlier experimenters (Wickham Legg, Charcot, Gombault, and others) after the ligature of the ductus choledochus.

This occurred in entirely aseptic cases, and was in no way to be connected with any inflammation starting from the point of ligature and following up the course of the gall-ducts.

Kelsch<sup>1</sup> records two cases where the retention of bile was followed by cirrhosis, one following closure of the duct by cholelithiasis and cancer of the gall-bladder, the other in which a dilatation of the gall-ducts was found without any formation of concretions.—*Boston Med. and Surg. Journ.*, Nov. 30, 1882.

<sup>1</sup> *Revue de Méd.*, 1881, p. 969.



*A Successful Case of Nephrotomy and Nephrectomy.*

Dr. GEORGE ELDER reports the case of a married woman, aged 36, who was admitted into the hospital under his care on April 29, 1882, suffering from an abdominal tumour. The history of the case went back two years and a half, when its first symptoms were pain down the left side and leg, aggravated by exertion and by painful micturition of scanty and thick urine. At no time was there hæmaturia. As time advanced, rigors, night-sweats, diarrhœa, nausea, anorexia, fever, and general declension in strength became superadded, until, on admission, she was literally "a bag of bones." The urine was loaded with pus, and, for the first few days, did not average more than sixteen ounces. Lithia water, *ad libitum*, soon increased the flow. There was distinct evidence of tubercle at apices of both lungs, but no family history of it.

Until May 10th, on account of the patient's weakly condition, he delayed making a full examination of the swelling, contenting himself with relief of the local suffering, and measures to improve her general condition. So tender was the superjacent skin, that no sort of satisfactory examination could be made without an anæsthetic. Ether was administered, and it was found that the tumour was a large left renal abscess, extending from the left anterior superior iliac spine up to, and continuous with, the cardiac dulness vertically, and, in the transverse direction, from an inch to the left of the umbilicus round to the spine. There was considerable bulging anteriorly, posteriorly, and laterally, and very distinct fluctuation was felt.

Evidently the kidney was converted into a large abscess-sac. After making the usual lumbar incision, and dissecting down to the organ, two large abscesses were emptied of offensive and curdy pus. The interior of the kidney was very friable, roughened, and gave rise to troublesome bleeding, which was checked by plugging with carbolized lint.

The kidney was very considerably enlarged, reaching inferiorly below the level of the crest of the ilium, and closely adherent to the surrounding tissues. The nephrotomy was performed under antiseptic conditions. There was little or no shock; and, on the evening of the operation, it was noted that the local pain was much lessened; and the temperature, which previously had fluctuated between 100° and 103° Fahr., fell one degree. For several days the urine contained a much smaller proportion of pus; and on the fifth day, for the first time since her admission, it gave an acid reaction.

For the three weeks subsequently, the patient's condition did not alter much. The wound discharged freely, and the urine was never free from purulent deposit.

The temperature high, and night-sweats continued, unless when controlled by pilocarpine in doses of one-sixtieth part of a grain. All through the illness this drug was effectual in checking the hyperidrosis. It is an interesting fact in this case, that the temperature in both axillæ was never the same, usually higher in the right; the difference occasionally being as much as two degrees. There was also, synchronously with this, right hemi-hyperidrosis. At this stage of the case, an attack of right pleuro-pneumonia, doubtless of septic origin, all but ended the record. When she got fairly over this attack he, on June 20th, extirpated the peccant organ, by extending the original incision upwards and downwards, and supplementing it by a transverse one. By long and patient manipulation with the fingers, he peeled the kidney from its adherent capsule, and finally secured the pedicle with thick carbolized silk. After the removal of the kidney, the friable tissue, of which the pedicle was composed, broke down under the strain of the ligature, and, for a few seconds, the hemorrhage was appalling. A

second and then a third ligature were applied, with the result of effectually controlling the greater part of the bleeding, and ligature of several small arteries finally disposed of it. During the enucleation of the kidney, there was very considerable oozing, which the pressure of sponges kept under control. Altogether, there was a good deal of blood lost. Beyond washing the cavity with carbolized water, and plugging, a few temporary metallic sutures completed the operation. Through an accident with the spray, the operation was not done strictly antiseptically.

For some hours after its performance the patient's life was despaired of from the intensity of the shock, which was combated by rectal injections of brandy and panerated beef-tea. During the first forty-eight hours the urine was very scanty, but since, its quantity and quality have been normal. Up to date (July 22d), the patient made an uninterruptedly good recovery; and the wound, although not skinned over, was quickly filling in with healthy granulations. With the operation, the hemi-hyperidrosis and differences in temperature in the axillæ disappeared.

His only regret was, that he did not remove the kidney at the first operation.

Since the operation, the chest symptoms have undergone considerable amelioration.

October 24. He last heard of patient two weeks ago, when her health was better than it had been for years.—*Brit. Med. Journ.*, Oct. 28, 1882.

#### *Extirpation of the Kidney.*

Dr. PAOLO DE VECCHI reports the case of a woman aged 33 years, who for the last three years had experienced a pain in the right side, and at the same time was troubled by a frequent desire to pass water. The pain grew worse, and, on examination, a small tumour was discovered in the right hypochondriac region.

Examination of the urine revealed nothing. Soon after, the pain being relieved, the patient postponed any further examination. She was married on July 17th; menstruation did not appear until early in September, when it was rather more abundant than usual. The pain now appeared again in the same side. On examination the tumour was found enlarged, painful, and movable; urine scant and purulent; suffering being continuous, it was decided that the tumour was connected with the right kidney. It was decided, however, to wait and give some anodyne. Relief, however, was not obtained, and the condition of the patient daily grew worse; her suffering was very great. Diagnosis: Pyelitis of one or both of the kidneys.

The tumour at this time was quite large, lying just below the liver, movable and very painful. The question of diagnosis lay between pyonephrosis with enlargement, a suppurating cyst and a malignant tumour of the kidney. An operation was suggested as the only means of relieving the patient.

The operation was performed according to the method of Knowsley Thornton, who, at the Samaritan Hospital, London, removed the right kidney from a young girl on the 11th of last month. An incision, of three inches, was made down to the peritoneum, and then extended to five inches. After tearing with the hand a few recent adhesions, he was able to raise the enlarged kidney, and to secure the insertion of the vessels and ureter with a Spence's clamp, which is used in ovariectomy to prevent hemorrhage. He tied as low down as possible the enlarged ureter and both large vessels, and then cut away the organ from its attachments. The forceps were now cautiously loosened. No hemorrhage occurred, and the small vessels were carefully tied with catgut. After cleaning very care-

fully the peritoneum and cavity with  $2\frac{1}{2}$  per cent. carbolic solution, he inserted five deep stitches and six superficial ones. The wound was then dressed lightly and the patient put to bed.

As a precautionary measure two hypodermic injections of brandy were given and hot bottles were placed about her. She soon recovered consciousness, and the pulse, which was weak, rose to 80. No vomiting occurred, although kept perfectly quiet, under ether, for over one hour, thanks to Dr. Whitwell's care. There was but little nausea during the first night. Ten days after the operation the patient was still doing well.—*San Francisco Western Lancet*, Oct. 1882.

#### *Nephrectomy by Abdominal Section.*

At the meeting of the Medical Society of London held Nov. 13, Mr. KNOWSLEY THORNTON read notes of three successful cases of Nephrectomy by Abdominal Section. The first case was that of a child seven years old, in whom the left kidney was removed by median abdominal section for hydronephrosis, which was probably congenital, as the ureter was only represented by a small fibrous cord. The child made an excellent recovery, and is now strong and well-developed; before the operation she was delicate and puny. The second case was that of a woman aged twenty-six, who dated her illness from her second and last pregnancy. The kidney was much enlarged. The patient was almost in a dying state when admitted into the Samaritan Hospital in February, 1882. Mr. Thornton first operated through the loin, but failed to find by this exploration the cause of the trouble. She improved for a time, but soon relapsed, and he removed the kidney by lateral abdominal section (incision of Langenbuch), and then found it to contain a large number of small calculi or concretions. The bladder end of the ureter was tied and brought out of the wound at its lower angle—an important precaution, as this portion of the ureter was generally diseased and putrid in its interior. The patient made an excellent recovery, and in a letter just received she states that her health is good, and the urine clear and natural. The third case was that of a woman fifty-eight years old who had been known to have had suppuration of the kidney for sixteen years. The kidney had been aspirated several times without relief, and Mr. Thornton decided to remove it by Langenbuch's incision. The operation was exceedingly difficult owing to the great obesity of the patient and the extensive adhesions. The sac into which the kidney had been converted weighed after removal  $4\frac{1}{2}$  lb., and it contained twenty pints of pus. The patient made a rapid and perfect recovery without fever, the only complication being some bronchitis, which was present before the operation, and became more acute for two or three days afterwards. Mr. B. Morison, of Canonbury, reports her present condition as satisfactory. The cause of the mischief was found to be a very small umbrella-shaped calculus, of which the handle was fixed in the opening of the ureter. All the operations were performed under strict Listerian principles, and to this Mr. Thornton attributed in great part the even and rapid recovery of the patients. He pointed out the great advantages of the lateral abdominal incision over the median or lumbar section, and expressed his belief that it could be the operation of the future in nephrectomy. He drew special attention to his method of treating the ureter in these cases, as he thought it of great importance. He considered that these cases emphasized the fact already demonstrated by his ovariectomy practice, that under antiseptic conditions the peritoneum can dispose of considerable quantities of effused material without the aid of the drainage-tube, and without constitutional disturbance, even after the removal of so important an organ as the kidney. The kidney could be more safely and thoroughly explored by Langenbuch's incision under antiseptic management than by the lumbar incision.—*Lancet*, Nov. 25, 1882.

*Double Intestinal Resection: Cure.*

Dr. RYDYGIER, of Kulm, reports a remarkable case of serotal hernia in a boy aged 14 years, which terminated, from violence received in a fall, in strangulation, suppuration of the sac, and formation of fecal fistulæ. After preparatory treatment an operation was undertaken with the double view of closing the fistulæ and causing a radical cure of the hernia.

An incision was made along the anterior wall of the serotum reaching to Poupart's ligament, and the prolapsed intestine drawn out of the sac; the tissues were so matted together and the walls of the gut so degenerated that in spite of the greatest care in the operation the walls gave way in so many places that the entire hernial mass was ligated and excised. The incision was then prolonged upwardly and the abdominal cavity opened and a second fecal fistula found, communicating with the opening in the groin.

It was intended to unite the ends of the intestine which had been first divided and then to perform a circular excision at the point of the second fistula and to unite the divided gut at this point also, but the patient passed into such a serious condition of collapse, and so much time was lost in looking for the ends of the intestine first divided, that this operation had to be abandoned and the two wounds in the intestine were sewed together and secured in the wound with the intention of forming an artificial anus, which was then dressed with iodoform. The patient progressed favourably, and was soon able to leave his bed, the artificial anus gradually contracting. About a month later, pain was again complained of, and the following operation was resolved upon; to unite the ends of the intestine from which a portion had been resected and then to excise the portion containing the artificial anus and sew the divided ends together; this plan was subsequently somewhat modified.

The abdomen was opened by an incision which commenced at the artificial anus, the latter excised, and efforts made to find the portion of intestine which had been divided at the previous operation. As these failed the intestine was closed with sutures after excision of the portion containing the opening and fastened into the wound and left until the gut should be distended with fecal matter when it was thought that the previously divided portion could be readily found. The case, however, progressed favourably in every respect; in 52 hours a normal fecal movement passed through the natural anus, the wound gradually closed, and in a month later the patient was entirely recovered. A diagram illustrates the probable method of cure of the intestine.—*Berliner Klin. Woch.*, Sept. 18, 1882.

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*Spina Bifida.*

At the meeting of the Clinical Society of London held November 16, 1882, Mr. CLUTTON said that when three weeks old the infant was brought to St. Thomas's Hospital, and was found to be a well-nourished, healthy child, with the exception of the above imperfection. The spina bifida was situated in the lumbar region, sessile, and with exceedingly thin walls. The impulse when the child cried was very marked, and the aperture in the bony canal large. There was no paralysis of the lower limbs, and the cyst, examined by transmitted light, did not appear to contain the cauda equina. The skin had been so stretched that the walls were quite translucent, and would evidently soon have given way, and allowed the fluid to escape. A week after it was first seen, and when the child was four weeks old, the cyst was injected with a drachm and a half of Morton's fluid, as little as possible of the contents of the sac being allowed to escape. A pad with collodion and bandage, completed the treatment. The mother was in-

structed to keep the baby on its back, to prevent, as far as possible, the gravitation of the fluid into the vertebral canal. The constitutional disturbance was very slight, and on the third day the child was in its usual health. The cyst began immediately to shrink, and by the end of a week the skin was in loose folds. At the end of the third week there was nothing to be felt of the spina bifida except a small puckered lining of cutaneous tissue. Mr. Clutton also related a second case, in which the injection of Morton's fluid was immediately followed by convulsions and death. In this instance the spina bifida had an ulcerated skin, and was much distended. He had advised treatment as giving the only chance of life. It was necessary to tell the parents plainly that there was great risk attached to the operation.

Mr. Marrant Baker asked whether any fluid had been allowed to escape before the injection was made, and whether this child was placed in the dorsal position after the operation. He did not think that the fatal case in any way detracted from the value of the successful one.

Mr. Pearce Gould inquired whether the skin in the first case was quite healthy, and whether the fluid of the spina bifida had been tested for sugar. The case was more favourable if the skin were healthy over the tumour, and it was also a matter of importance whether the dilatation was of the arachnoid or subarachnoid space. In the second case, was it true that the child would certainly die? He mentioned a case of large spina bifida which had sloughed, and which recovered, the wound soundly granulating, though the child died some time after from marasmus, not from the spina bifida.

Mr. Barker has used the injection of Morton's fluid once in a case of spina bifida, without producing any effect on the tumour or any unpleasant symptoms. The child died later on from bursting of the tumour.

Dr. Howard Marsh said the subject was the most important one in the surgery of childhood. He narrated a case in which the injection of about a drachm of the fluid produced immediate pallor and collapse of an infant four months old; the tumour had a healthy covering of skin, was of the size of a Seville orange, and situated in the usual place. The child died in the collapsed state, sixteen hours after the injection. He could not conceive that the treatment was not free from risk. The relation of the tumour to the spinal canal and the size of the aperture in the bone were important points; the introduction of the fluid should be made slowly, so that it might gravitate by its own weight to the bottom of the sac, and then the patient should be kept in the dorsal recumbent posture.

Mr. Heath narrated a case of anterior meningocele, which was recorded (along with another one by Prescott Hewett) by Sir James Paget in an early volume of the *Transactions of the Pathological Society*, in which iodine must have been injected into the cavity of the lateral ventricle without producing serious symptoms. He thought that talipes calcaneus was very common in cases of spina bifida.

Mr. R. W. Parker had treated about a dozen cases in the way recommended by Morton, with one successful result, and without any bad effects in the other eleven cases. The size of the osseous aperture was of much importance, as was also the circumstance whether the membranes alone formed the tumour, or whether the central canal of the spinal cord was also dilated. He had injected about half a drachm of Morton's fluid every week for two or three weeks without producing any apparent effect. Recently he had had a case under his care, where the child when first seen was twenty-four hours old. The fluid oozed very freely from the tumour for fourteen days. The sac had sloughed, and left a cleft sufficient to admit two fingers; opisthotonos had developed, and the child was now in a very bad way. In this case there was double talipes calcaneus. In the

case which recovered there was talipes calcaneus on one side only; in another instance there was equino-varus.

Mr. Godlee had had a successful case. The spina bifida had a very thin wall of healthy skin. A drachm of fluid was slowly injected; the dorsal posture was resorted to; the sac gradually dwindled away.

Mr. Bennett had treated one case without any success, but there was no immediate bad effect. Another instance of spina bifida had come under his care, in which he declined to operate because the child was out of sorts at the time. This child died on its way home, in convulsions. If he had used the injection, probably that would have been credited with the convulsion.

Mr. Morratt Baker mentioned a case in which spina bifida had been consolidated, the patient afterwards becoming hydrocephalic and losing power in the legs. Was there any connection between the cure of the spina bifida and the subsequent course of the case?

Mr. Clutton, in reply, said that sugar was found in the fluid of his first case, and the skin, although very thin, was not ulcerated. The explanation of success or failure might be found in this; that the aperture in the bone did not necessarily correspond with the aperture in the theca vertebralis: one might be very different in size as compared with the other.—*Med. Times and Gaz.*, Nov. 18, 1882.

#### *Dislocation of the Foot with Version and Torsion of the Astragalus.*

Mr. RICHARD BARWELL read a paper on this subject at the meeting of the Royal Medical and Chirurgical Society, held on Oct. 24th, of which the following is an abstract. Dislocation of the astragalus is not uncommon, the bone, displaced from the socket formed by the leg-bones as well as from the rest of the tarsus, receiving in nearly all instances a twist, so that its surfaces look in abnormal directions. Another very rare form of injury is that of which the following is an example: G. F., aged twenty-eight, received the injury by the overturning of a gig that he was driving, he falling on the right foot. The foot was greatly inverted, the heel raised; the inner malleolus was much obscured, the outer very prominent. The round head of the astragalus was in front of and below the external malleolus. Running from the head to the upper part of the malleolus was a ridge of bone convex outward. A small wound a little way up the leg communicated with the seat of injury. Attempts at reduction, even though the Achilles tendon was divided, were ineffectual. Mr. Barwell excised the astragalus. It was in its normal place in the tibio-peroneal socket, but was twisted, so that the trochlea looked outward, and rested against the articulating face of the outer malleolus. The man did extremely well; he was discharged in three months, walking with crutches, and was shown at the Society's meeting, walking well without any assistance from crutch or stick. After a few remarks on the difficulty of nomenclature in dislocation about the tarsus, the author referred to Malgaigne's description of version and torsion "*sur place*," the former referring to a turn of the astragalus on its perpendicular axis. Of these Malgaigne gives four examples, and the author had collected two others. They all, with one exception, were inward. Torsion, by which he means a twist on the antero-posterior aspect, is in reality more rare, although it would appear on first sight more common because Malgaigne quotes six cases; but on examination of the original records, these changes he found to be not *sur place* save in one case, Dupuytren's—and even here the bone was nearly extruded—and one preparation, the history of which is unknown, and in which the turn is very slight. The author's case is the only one in which a diagnosis has been arrived at during life, and, as far as can be ascertained, the only one in which the bone turned a quar-

ter of a circle, and lay fairly in the tibio-peroneal socket. An appendix was added giving a short description of every case both of torsion and version in corroboration of these statements.—*Lancet*, Oct. 28, 1882.

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*Amputation at the Hip-joint, by Furneaux Jordan's Method.*

Dr. LEWIS MARSHALL reports four cases, operated on by this method, which is as follows: If incision has been previously practised, the existing incision is prolonged to about the middle of the thigh; the femur enucleated; the soft parts cut through with a circular sweep of the knife, and the femoral artery tied. Mr. Jordan, in his case, controlled the bleeding by a tourniquet on the external iliac; but, as will be shown subsequently, in children's work at least, the fingers on the common femoral have hitherto proved sufficient.

Summarized, Dr. Marshall's cases stand thus: Four in number; three after failure from incision, and one where that operation was deemed inadmissible on account of the extent of the disease in the shaft of the femur. All were, as to their general condition, in such a state, that a fatal termination might be predicted at an early date; and one, the girl, had a very large and persistent deposit of albumen, lasting up to and beyond the time of her discharge from the hospital. However, she has for some months been free from any symptom of this kind. Their ages were: two at seven years, one at five years, and one at two years and five months. In all, the fingers were used to compress the common femoral; but in No. 1 Esmarch's band was applied. This slipping, the fingers were substituted for it. Owing to the change in the means chosen for restraining hemorrhage, more blood was lost in this case than in any of those afterwards. No more than two vessels were ligatured in any instance, and in some the femoral only. Two drachms would represent the maximum blood-loss. Catgut was the ligature used; the dressing employed being in No. 1 thymol; and in all the others a loose covering of carbolic oil and lint. Drainage was secured by horse-hair. The fatal cases occurred three months after the date of operation from visceral lesions.

Mr. Jordan remarks upon his single case that as "compared with the ordinary operation of two flaps, the wound was less severe, the cut surfaces were less extensive, and, in a manner, further removed from the trunk; it was followed by less shock, less hemorrhage, less opportunity for septic infection. The vessels cut were more easily dealt with. The thigh might be simply cut through with a circular sweep or a few sawing movements. The boneless thigh should be firmly held, and somewhat flattened, if cut across. The muscles may be cut on the same level as the skin; the bone being absent, they retract so strongly that the skin readily covers them; its vitality is less endangered; and a great cellular plane is not opened. The bulk of the soft parts of the thigh, especially near the pelvis, lies at the inner side of the femur. Why put a knife through these parts? It is better to enucleate the femur when it is covered, and cut across the limb where it is smaller and further removed from the trunk. In removing the thigh very low down, the area of the wound is, no doubt, increased; but even then it would be a much less dangerous wound in character and locality." He goes on to say that the operation is more suitable for those cases in which the soft parts can be freely left. "The surgeon may, if he choose, make the circular sweep before the shaft of the bone is turned out, if precaution against hemorrhage have been very complete." He also calls attention to the value of the operation as giving safe access and free drainage for any length of time. The principle of the operation is suggested by Mr. Jordan as a valuable one to adopt for amputations in other localities.—*Brit. Med. Journ.*, Oct. 7, 1882.

*Ligature of the Common Carotid Artery for Severe Bleeding from the Throat after an Attack of Scarlet Fever.*

At the meeting of the London Clinical Society on Oct. 27, Mr. A. J. PEPPER read notes of this case. C. W., aged 30, was admitted into the Fever Hospital, under the care of Dr. Mahomed, on January 2, 1882, suffering from scarlet fever, which ran a simple course, with ordinary convalescence, until February 22d, when the patient shivered and complained of sore-throat. Temperature  $101.6^{\circ}$  Fahr. On the morning of the 23d, the uvula was large and translucent, and there were redness and swelling of the soft palate. On the 24th, he complained of great difficulty in swallowing, and throbbing of the left side of the throat. Two hemorrhagic patches had appeared at the junction of the hard and soft palates, with a large gelatinous bleb on the left side. Three hours later, the throat, especially on the left side, became rapidly swollen, accompanied by a feeling of suffocation; soon afterwards, the patient brought up a considerable quantity of blood; the swelling and difficulty of breathing subsided; at the same time, the hoarseness passed quite suddenly into complete aphonia, which persisted. The alternate enlargement of the neck, hemorrhage, and subsidence of the swelling, were repeated several times until the morning of the 27th, when the patient's condition became critical, he having lost forty ounces of blood in all, and there was no sign of arrest of hemorrhage. There was a considerable bulging of the left side of the pharynx, with marked dyspnoea and aphonia. At a consultation between Dr. Mahomed and Mr. Pepper, it was decided to ligature the left common carotid artery, as it was thought dangerous to cut into the post-pharyngeal abscess. The patient was put under chloroform, and the artery tied by Mr. Pepper at the upper border of the omo-hyoid muscle, considerable difficulty being caused by the greatly distended state of the veins. Carbolic catgut was used, and the operation performed antiseptically. For a time, respiration threatened to fail, but the patient rallied completely in three or four hours. Soon after the operation, he brought up six ounces of pus, and there was a corresponding diminution of the swelling. The temperature at once became normal; and the wound healed readily. On April 7th, there was numbness of the skin corresponding to the distribution of the superficial cervical nerve. The patient recovered only partially from the aphonia. There was fixation of the left vocal cord. The general health was good. Dr. Mahomed said that examination of the patient's throat at the end of March showed that the swelling and puckering of the mucous membrane at the entrance to the larynx were still present; both cords were normal in appearance, the right moving freely, but the left was fixed in a position of partial abduction. Secondary sore-throat after scarlatina was uncommon; it had occurred in fifty-seven out of the 3957 cases treated at the Fever Hospital during the last ten years; it resembled the condition of the throat seen in the primary attack, but had never proved fatal in these cases; its occurrence depended upon the concentration of the poison, being more frequent when the wards were overcrowded or badly ventilated; they were, he believed, modified second attacks of the disease. Complete second attacks (with rash, sore throat, and fever) had occurred in twenty-nine cases out of the 3957; all recovered, except one, who died from other complications; these second attacks also depended upon the concentration of the poison. Hemorrhage from the throat was a rare but most dangerous complication, and might occur during the primary or secondary throat affection. It resulted either from sloughing of the soft palate, or (as in this case) from opening of a vessel into an abscess cavity. There had been six cases at the Fever Hospital during the last ten years, and all the severe



ones, with the exception of the present, had been fatal. The ligature of the artery appeared to exert a very beneficial influence over the inflammatory action, for the patient recovered most rapidly and completely.—*Brit. Med. Journ.*, Nov. 4, 1882.

## OPHTHALMOLOGY AND OTOTOLOGY.

### *The Diagnosis of Detachment of the Retina.*

Detachment of the vitreous is well known anatomically, but its ophthalmoscopic signs are of doubtful character, and only a very few clinically observed cases are on record.

It is known to occur after injuries, such as cataract extraction and the intrusion of foreign bodies, and in such cases appears to happen both primarily, from immediate loss of vitreous, and secondarily, from shrinking of the degenerated vitreous body; it occurs also in uninjured eyes, most frequently in connection with high degrees of myopia; also with anterior staphylomata. It may arise from the intrusion of serous, purulent, or sanguineous effusions or new growths, between the vitreous and retina.

Clinically, detachment of the vitreous is very generally hidden from inspection by the disorganizing changes which precede or accompany it. The cases in which it may be observable are chiefly those of cataract extraction and myopia. Graefe believed it to be sometimes recognizable in eyes with posterior staphyloma as a uniform and extensive cloudiness in the vitreous chamber, appearing suddenly, possessing a certain amount of mobility, and giving a grayish reflex. Weiss and Galezowski have described it as a grayish or whitish crescentic line near the inner margin of the papilla, which, on parallactic movements, is seen to lie in a plane anterior to the retina. De Wecker, to whom the author does not refer, states on the other hand that he has failed, after very careful search, to detect vitreous detachment by these signs—(Graefe-Saemisch, iv. p. 717). The ophthalmoscopic diagnosis of the condition certainly remains doubtful. The question would generally lie between detachment of the retina, detachment of the vitreous, and membranous opacity in the substance of the vitreous. DIMMER (*Klin. Monatsbl. für Augenheilk.*, August, 1882, p. 260) relates two examples observed in Arit's clinique which throw some light on the subject.

I. A man, aged 64, underwent linear extraction of a ripe senile cataract; immediately after dissection of the capsule the zonule ruptured through straining of the patient, and a vitreous bead protruded; the lens was withdrawn by the wire scoop, with only slight loss of vitreous. For eight days the lips of the incision were held apart by a protrusion of vitreous, but nineteen days after the operation the eye was pale, the wound well healed without incarceration of iris, and  $V = \frac{2}{100}$ , and two months later,  $\frac{2}{30}$ . A little later vision began to fail without sign of inflammation, and fourteen months after the operation the following conditions were observed: Incision smoothly healed, its middle portion being in the corneo-scleral junction; coloboma 10 mm. wide; in the coloboma a delicate membrane united below at one spot to the pupillary margin. The ophthalmoscope shows a cyst-like body hanging from above and reaching downwards as far as the middle of the coloboma, grayish at its lower limit, but above this admitting the passage of light from the fundus; at its outer part is a constriction in which the grayish colour is pronounced; with movements of the eye it oscillates a little, but never sinks; its anterior surface is smooth, devoid of vessels, and lies not far

behind the plane of the iris; laterally it disappears behind the iris; its extent backwards cannot be determined; disk hazy; a large detachment of the retina below. The retinal vessels can be followed upwards from the disk till they reach the boundary of the cyst-like body, where they make a small bend; above that they are indistinct, but certainly lie behind the cyst in the plane of the fundus. T. slightly diminished.

In the diagnosis of the nature of this cyst-like body a detachment of the retina was excluded by the absence of vessels on its surface and their presence behind it; a membrane in the substance of the vitreous was excluded by the peculiar bladder-like appearance and the fixity—thus a detachment of the vitreous was established.

The bending of the vessels at the margin of the cyst the author attributes to a difference in refraction between the vitreous body and the fluid occupying the space produced by its detachment.

The occurrence of the detachment was not, as in some cases, a direct result of loss of vitreous at the operation, for the visual result was for a time excellent; a subsequent exudation of serous fluid, or a shrinkage of the vitreous with consequent transudation of fluid between it and the retina, was probably the cause.

II. A man, aged 29, presenting the results of old iridocyclitis with extensive synechia and raised tension, underwent repeated iridectomies; the lens was injured and became absorbed; a coloboma nearly equal to the upper half of the iris was obtained. The ophthalmoscope showed a cyst-like body closely corresponding in form and position to the one before described, but blood-red; it had a similar limited mobility and partial transparency, and similar constrictions or folds at its lower margin.

It was not possible in this case to discern the retinal vessels behind the mass, but the non-occurrence after a long period of any change in the colour of the cyst, and the non-appearance of any vessels on its surface, seemed to prove it to be a detachment of the vitreous and not of the retina, the space between vitreous and retina being filled with blood.

An instance of detachment of the vitreous diagnosed with the ophthalmoscope, and confirmed after excision, was recently brought before the Ophthalmological Society by Dr. Swanzy. (*Vide O. R.*, June, p. 229).—*Ophthalmic Review*, Oct. 1882.

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### *The Prognosis and Treatment of Otorrhœa.*

Dr. SHIFFERS, of Liège, has recently written a monograph on this subject which contains some truths which should be placed before the eyes of physicians from time to time. That singular error, that the suppression of an otorrhœa is attended with danger, viz., that by stopping it there may ensue consecutive cerebral diseases, is still believed and acted upon by a number of physicians. The author of this brochure endeavours to show by irrefutable facts, based on anatomical and clinical observation, that physicians holding such views are guilty of either culpable ignorance or indifference, and to them he addresses himself.

The author then reports a case observed by him in which a chronic purulent catarrh of two years' duration had been treated by nothing but warm water syringing. This had induced the growth of granulations and polypi in the ear, which interfered with examination of the fundus, and also suppuration in the mastoid cells. A deep incision behind the ear was followed by an escape of pus from the wound and recovery ensued.

The prognosis in chronic otorrhœa necessarily varies with the nature of the disease of which it is only a symptom. In any case this disease demands attention,

because of the intimate relation between the middle ear and organs of capital importance, such as the brain, the carotids, and the jugulars, to which the inflammation may spread. In addition to these local lesions, others of grave import may ensue, since chronic purulent catarrh of the middle ear may assume the nature of an osseous abscess, and become the determining cause of a pulmonary or a general tuberculosis. Von Troeltsch is quoted as having said that those subjects afflicted with chronic otorrhœa never attain old age, and several English insurance companies decline to insure those with this disease.

In treating these cases reliance must not be placed entirely on local or on general treatment. The latter should be a combination of medical and hygienic treatment. To bitter tonics and ferruginous preparations there should be joined an extended hygienic and hydropathic treatment, which latter in some instances has excellent effects. The local treatment set forth in this brochure consists chiefly in the use of the syringe and instillations, the latter being those best known—no new forms being suggested. The insufflation of powders is limited to those cases in which the discharge is slight, and the opening in the membrana tympani large.—*Amer. Jour. of Otol.*, Oct. 1882.

## MIDWIFERY AND GYNÆCOLOGY.

### *Presentation of the Abdomen.*

DR. OTTAVIANO MARCHIONNESCHI relates three cases of presentation of the abdomen recorded by other observers, and adds a fourth seen by himself and Professor Minati. He discusses the arguments for and against the belief in the possibility of this presentation, by Solayres, Baudelocque, Gardien, Maygrier, and Capuron. The case seen by Dr. Marchionneschi was that of a woman in labour with her ninth child, whose previous labours had been normal. The pelvis was normal, pregnancy at term, the waters had run off some time; the patient had been in labour twenty-four hours. The shape of the uterus was unusual, being more ample than usual at the sides. The fœtus was living. On examination, Dr. Marchionneschi found the centre of the pelvis occupied by the superior and inferior limbs of the child. He at once recognized the case as an important one, and sent for Professor Minati, who arrived immediately. "I always remember," says Dr. Marchionneschi, "the original and appropriate words in which Dr. Minati made known to me the result of his examination. 'Sento qua, ei mi disse, tanta gente a conversazione; e subito dopo potè soggiungere: lo credo un bellissimo caso di presentazione addominale.'" The dorsum was lying upwards, the abdomen underneath, masked by the agglomerated upper and lower extremities. The fœtus did not descend. The contractions of the uterus were sufficiently frequent but not powerful. Dr. Marchionneschi reached down a leg, when he found that the umbilical cord had become so tightly twisted round it that he could with difficulty pass a small pair of scissors between it and the thigh to divide it before bringing down the other leg. The rest of the child followed easily. The fœtus was a living female at term, healthy and well-shaped. The puerperium proceeded normally. Dr. Marchionneschi states that Professor Balocchi had met one case of abdominal presentation, which he always alluded to in his lectures, at the same time remarking that he had always believed the presentation impossible until he saw it.—*London Med. Record*, Nov. 15, 1882.

*Diagnosis and Treatment of Extrauterine Pregnancy.*

In connection with an extremely interesting case of intraligamentary or extra-peritoneal pregnancy, Dr. FRÄNKEL (*Sammlung Klin. Vorträge*), arranges the points of differential diagnosis and treatment in the different stages of extrauterine pregnancy. First, in regard to the case reported, he believes the simplest explanation of the cases in which tubar-intraligamentary pregnancy extends beyond the fourth or fifth month, is that the foetal sac is originally located in the tube; that, then, its lower wall, instead of the upper, thins and distends downward between the folds of the broad ligament, which are capable of distension enough to allow of so long a continuance of the growth of the foetus. The autopsy, in his case, seemed to show this.

Diagnosis of extrauterine pregnancy in the early months is difficult, but, with our present knowledge, not impossible. "Old Heims," the Berlin physician, so celebrated for his brilliant diagnostic powers in such cases, described the following as characteristic symptoms: "Pains like labour pains, usual even from the third or fourth week on, connected with constipation and retention of urine, a bloody mucous discharge from the urethra, impossibility of lying on the side on which was the foetus, often tenderness limited to one small point, a peculiar tone in whimpering and crying, unlike any other tone of complaint, peculiar motions of the body, twitchings of the face, etc., etc." If, with only such helps as these Heims made so few errors, what should we do at present? First, remember Spencer Wells's rule, always to suspect pregnancy in case of any abdominal tumour in a woman, extrauterine pregnancy is then to be diagnosed from the following points:—

1. From general symptoms pointing to pregnancy.
2. From the presence of colic and crampy pains in the lower abdomen, for which no other cause is present.
3. From irregular discharges from the uterus, and sooner or later a decidua, and
4. From the hearing of the foetal pulse or feeling the child.

These are found in all the books. The *inconstancy* of the symptoms is a great point. There is no pathognomonic one except the foetal pulse and movements of the child while the uterus is empty. The *meneses* may remain away entirely, may continue normally, usually are scanty and irregular. The stomach symptoms, the position and shape of the tumours, the other subjective symptoms all vary. One symptom is constant. That is "*the formation and expulsion of a decidua out of an otherwise empty uterus.*" This is always formed, but not always easily demonstrated. Wyder's differential microscopical points between the decidua of menstruation and that of pregnancy have been contradicted by Ruge and Möricke, and it has been clearly shown that the cells in some parts of the decidua atrophy, and shrink to small round cells so much more rapidly than in other parts, that it is not a safe test to scrape off a little by the curette, and examine this. Even the so-called decidua cells "point strongly to pregnancy, but do not prove it." The microscopical examination must be supported by the history and course of the case. A continued amenorrhœa with expulsion of a single membrane speaks strongly for pregnancy. Dysmenorrhœa, with frequent expulsion of bits of membrane, is more likely only membranous dysmenorrhœa. When the decidua is expelled as a closed sac, it is almost pathognomonic of pregnancy. The point of time at which the placenta may be expelled varies greatly, and the author does not agree with Litzmann that, after this or after the return of menstruation, we have no further efforts at expulsion of the foetus to fear. He has seen the decidua cast off early, and a late rupture of the foetal sac.

In regard to the menses, the author agrees with Cohnstein that amenorrhœa till the end of pregnancy is the rule. The amenorrhœa continues longest in the abdominal form. In the tubal and ovarian forms there are more often, during the second or third month, irregular flows from the uterus, but the author has not found this as important a sign as Cohnstein represents it.

In regard to probing the uterus, the author cautions very strongly against it as likely to produce contractions in and perhaps bursting of the sac. Where contractions in the tumour are already present, it should be absolutely avoided (except just before an operation, for additional certainty), and the size and shape of the uterus made out by bimanual palpation. The examination of the tumour should be made carefully, and no steps taken which might lead to bursting of the sac, unless we are ready for immediate operation. The exploratory puncture, as used by Goodell and A. Martin, is the last means.

The diagnosis of the variety of extrauterine pregnancy is difficult. One rule of Schröder's is, "if the rupture occurs in the first four months, the ovum was probably in the tube, or possibly the ovary; if later, in the ovary, or probably the abdomen." The author has shown that tubal pregnancy is more frequent than formerly supposed, and that, in contradiction to this rule, it frequently extends as long as any form. It may be recognized by the long elliptical shape of the tumour, extending across the abdomen, the increase in muscular growth of the uterus, the periodic spontaneous contractions of the sac, the easily excited contractions on sounding the uterus, and the degree of hardness occasioned in the sac by the contractions. In an advanced pregnancy, if the sac is free, and there are few symptoms of peritonitis, the form is probably ovarian; if the latter have been severe, and the child can be felt right under the abdominal walls, the form is probably abdominal. In the latter, the ovum, settling toward Douglas's sac, is apt to dislocate the uterus, cause constipation, and interfere with micturition. The characteristics of interstitial pregnancy are very uncertain. The sac may sometimes be felt arching out from the large uterus.

In regard to treatment, three questions arise: First, the choice of place of operation; second, the time of operation; and third, what to do after bursting of the sac.

First, laparo- or clytrotomy? The first point here is, if possible, to avoid cutting into the placenta. In two cases, the position of this may be definitely ascertained. When Douglas's sac and the vault of the vagina is filled with some projecting part of the child, we are sure the placenta is not there. If the placenta can be felt through the vaginal wall, we would never cut there. In cases where the seat of the placenta is uncertain, laparotomy is the best operation.

Perhaps even more important is the *time* of operation. All are agreed that up to the fourth month, our endeavour should be to kill and promote the resorption of the fœtus. Freidrich's method, aspiration of the sac and morphine injections, is probably the best means to this end. After the fourth month, the rule is to wait till near the end of pregnancy, watching the patient meanwhile with the greatest care. In some cases, the actual or threatened bursting of the sac may make earlier operation necessary. But generally rest, antiphlogistics, and narcotics will bring us to near the end of pregnancy. Then comes the question of active or expectative treatment, whether to operate in the eighth or wait till the tenth month. The author, reminding of how uncertain the calculations of the duration of pregnancy are in these cases, believes in being guided by the *strength* and *vigour* of the fœtus, and operates as early as its movements are strong and any appreciable parts of it well developed. Omitting the technique of the operation, the next point is when to operate after the death of the child. Here the author is guided by the condition of the placenta. His endeavour is to wait until

its vessels are obliterated, which usually takes six weeks, but if symptoms of infection set in, of course it is necessary to operate earlier. The rule is, "the longer the time after the death of the fœtus, the less is the danger of hemorrhage, either during or after the operation." In these cases, the placenta is removed in the operation. A. Martin has lately suggested transfixing the placenta, in cases of living fœtus, with needles and heavy ligatures, and immediate removal of it, and has been successful in three cases. He had less success in removing the whole sac, except enough to sew together and drain into the vagina. This is only possible when the walls of the sac are quite free from adhesions, and quite thick, and in good condition. The removal of the placenta, however, is a great advantage.

Third, what is to be done after bursting of the sac? If this occurs in the first three months, the author believes in the expectative treatment, measures to stop hemorrhage, and combat acute anemia. After the fourth month, rupture of the sac rarely occurs. If it takes place when the child is living, and when we are right at hand, it is well to operate immediately and try to save the child, and such are good cases for Martin's resection of the whole sac. If the child has been dead some time, it is best to wait. In some cases, the sac and its contents will become encapsuled, in others form an abscess, which may be treated according to the ordinary rules of surgery.—*Amer. Journ. of Obstet.*, Nov. 1882.

#### *Puerperal Diabetes.*

At the meeting of the Obstetrical Society of London, held November 1st, Dr. MATTHEWS DUNCAN read a paper on this subject. The author pointed out the distinction between the slight glycosuria of pregnant and suckling women and real diabetes, with its polyuria and large amounts of sugar. Physicians and surgeons were well aware of the dangers introduced into their cases by complication with diabetes. But the subject of diabetes complicating pregnancy and parturition had attracted almost no attention; and this probably arose from its rarity, which might be accounted for by the disease frequently destroying in women the sexual energies, as it is said to do in man. The author had collected twenty-two cases in fifteen women, and they demonstrated the great gravity of the complication as respects both mother and child. Of the twenty-two pregnancies (including those ending prematurely), four had a fatal result soon after delivery. In seven of nineteen pregnancies in fourteen women, the child, after reaching a viable age, died during pregnancy; in two the child was born feeble and died in a few hours: making an unsuccessful issue in nine of nineteen pregnancies. The histories showed that diabetes may supervene on pregnancy; that it may occur only during pregnancy, being absent at other times; that it may cease with the cessation of pregnancy; that it may come on after parturition; that it may not come on in a pregnancy occurring after its cure. They showed that pregnancy may occur in a diabetic woman; that it may be not appreciably affected in its natural progress and termination by the disease; that it is very liable to be interrupted by death of the fœtus.

Dr. JOHN WILLIAMS thought that these cases were less infrequent than, owing to the fact that the urine was not always examined, was supposed. He had met with four. A trace of sugar in the urine was common, but this was not diabetes.

Dr. ROBERT BARNES had investigated the condition of the urine in pregnancy, as to albumen, urea, and sugar. The occurrence of sugar was physiological, though not constant. Sinéty had shown that sugar appeared in the urine when lactation was suppressed; this was of interest in connection with the normal

fatty change in the liver shown by Tarnier to occur in pregnancy. He (Dr. Barnes) drew a parallel between albuminuria and glycosuria during pregnancy. Both were physiological, but might pass the physiological boundary, and then grave accidents ensued.—*Med. Times and Gaz.*, Nov. 18, 1882.

*The Influence of Vesico-Vagina Fistula upon the Genital Function in Women.*

Some correspondence, published not long ago in a contemporary, leads us to think the researches of Dr. Kroner, Assistant-Physician to the Gynæcological Clinic at Breslau, into the above subject may not be without interest to our readers. They have been published in a recent number of the *Archiv für Gynäkologie*.

First, as to menstruation: out of 60 cases of urinary fistulæ of different kinds which he has collected, in only 14 was menstruation regular; in 38 there was complete amenorrhœa, and in the remainder the flow was scanty and recurred only after unduly prolonged intervals. Dr. Kroner considers the cause of this deficiency, and discusses the part probably played by changes in the uterus and its adnexa respectively. To us it seems sufficiently accounted for by the debility due to the pain, discomfort, and depression produced by so exceedingly unpleasant an infirmity, as well as by the inflammatory diseases by which difficult labours, such as lead to vesico-vaginal fistula, are so often followed.

Next, as to conception: out of the 60 cases just referred to, in 6 conception took place while the patient was still suffering from the fistula—not a large proportion. To these Dr. Kroner has been able to add 31 others, as to whose menstruation he could not get particulars. Of these, 2 became twice pregnant, 3 became three times pregnant, and 1 had a large family, after the occurrence of the fistula.

As to the course of pregnancy and labour: in 23 there was miscarriage, or labour came on prematurely, the cases being pretty equally distributed, as to the time of delivery, between the third and the ninth months; and in 9 the pregnancy went on to term. Information is defective on this point in the other cases. Dr. Kroner, we think rightly, attributes this frequency of premature delivery to the frequent associations of pelvic adhesions with the fistulous condition. In 3 cases the fistula healed spontaneously after delivery.

Two questions arise with regard to pregnancy complicated with vesico-vaginal fistula: 1. Should premature labour be induced? Dr. Kroner thinks not. 2. Should the fistula be operated upon during the pregnancy? He sees no contra-indication to this course, unless the fistula be very high up, or the condition of parts such that the uterus has to be strongly pulled down, or made to take part in filling the fistula. The operation does not necessarily lead to abortion or premature labour. Lastly, the influence of pregnancy and labour upon fistulæ that have been cured: about this it is impossible to state any general conclusion, for this reason—that the causes, such as contracted pelvis, etc., which have once led to the formation of fistula are apt to do so again.—*Med. Times and Gaz.*, Nov. 18, 1882.

*Offensive Catamenia, or Bromo-menorrhœa.*

Dr. ALFRED WILTSHIRE writes that as far as his investigations have yet gone, the disordered conditions with which the affection is most frequently allied appear to be divisible into two chief classes—those of *general* and those of *local* origin, though, of course, these may be combined.

The general class comprises chlorosis and allied impaired blood-conditions.

In chlorosis, menstruation, when not suppressed, is usually of a feeble type, the flow being scanty even if regular. Mostly the discharge is very pale, and in some cases it is green in colour.

It is in chlorotics presenting this greenish discharge that offensiveness is apt to occur. This is seldom persistent or pronounced, nor is the flow abundant, but the latter may become so from intensification of hæmatolytic change. It seems to be primarily due to the degraded blood-condition, for it subsides when that is amended; but I have thought that in some instances fœtidity was favoured when, through scantiness, the flow was insufficient to establish a current strong enough to carry out the excreted fluid before decomposition began. The colour is probably owing to altered hæmoglobine.

Although chlorotic young women appear to be most liable to this form, he has observed a few instances in simple anæmia; and, more rarely, in patients who have been living in unwholesome houses, or exposed to sewer-gas or other mephitic exhalations.

Probably other causes of blood-impairment may in like manner be operative, and will in time be discovered.

The other class, of *local* origin, comprises several varieties. These may be grouped as follows: (a) Attributable to prolonged retention and decomposition of clots and other *débris*, due either to mechanical obstruction to the exit of the flow (stenosis or flexion), or to deficient expulsive action on the part of the uterus, often accompanied in either case by a scanty flow. (b) To the character of the discharges in certain morbid conditions and growths within the body of the uterus—for example, in subinvolution, particularly of the placental site—after abortions or confinements; in papillomatous and other diseases of the endometrium; in polypi, fibroids, sarcomata, epitheliomata, and other malignant growths of the interior of the uterus, usually where the discharge is not abundant, for if there be hemorrhage enough to keep the *débris* washed away, decomposition may be prevented, except where fœtor comes on only on the subsidence of the flow. He has reason to believe that it is an occasional, though rare, sequela of gonorrhœa, and that it accompanies certain degenerations of the endometrium.

It is obvious that when there is a mechanical obstacle to the escape of menses the remedy consists in overcoming it by appropriate measures. When there are grounds for believing the offensiveness to be due to retention of the menses from defective expulsion, oxytocics may be given—as quinine, cinnamon, borax, ergot, viburnum, vinca major, and such like. When there is no obvious blood-impairment a suspicion of local trouble may be justifiable, and indicate exploration where it is admissible. But this is not always permissible, and should be refrained from whenever it can properly be avoided. This happened in one of my patients, a well-grown young woman, not anæmic or chlorotic, who appeared not to be herself very conscious of her infirmity, but stated that the laundress complained of the offensiveness of her diapers. In her case offensiveness came on only towards the end of a copious flow.

In the case of defective involution of the placental site, which may be accompanied by an ichorous, offensive weeping, undergoing aggravation at the menstrual epoch, similar treatment is desirable. Internally, astringent preparations of iron, nux vomica, and arsenic are also usually requisite. Our therapeutic efforts should, in fact, be directed generally as well as locally in such cases. The condition is not very uncommon after miscarriages, especially when often repeated, or due to syphilis. In the latter event small doses of bichloride of mercury given with the old-fashioned tr. ferri sesquichlor. (P.L.) yield the best results.

Many of the most severe and obstinate cases of fœtidity of the catamenia are due to disease of the endometrium.



In the somewhat rare cases of malignant growth in the cavity of the body of the uterus, especially in elderly women, the discharges may at first be merely sanious and fetid; soon, however, metrorrhagia supervenes. Offensiveness of the catamenia may accompany intra-uterine polypi, particularly if small and numerous. When these or similar growths excite free hemorrhage, the mælo-dour ceases, or may be observed only towards the end of a period. The same may be said of fibromata, sarcomata, or carcinomata.

The occurrence of offensiveness in the catamenial discharges of women approaching middle age, who have previously been healthy in this respect, is sometimes of ominous significance. It may be the precursor of cancerous disease, and when complained of should always lead to an examination. If this were more commonly practised in such cases we might hope to discover latent malignant mischief much earlier than we usually have the opportunity of doing, for the poor sufferers seldom seek advice until they are driven to ask relief for their floodings or pains, and the disease may then have advanced beyond the reach of human aid.

Similarly, in polypi and some fibroids the earliest symptoms may be an offensive sanious flux preceding or following the menstrual flow; though usually flooding is an early symptom.

Whenever practicable, removal of the morbid growths should be resorted to. In the sessile papillomata or villous growths, erosion by means of the curette is the best means. This I follow by the application of some caustic—either chemical, as chromic acid, iodine, or nitric acid, or (rarely) by the actual cautery. The results are generally gratifying, but recurrence is not rare. In all cases the removal should be thorough, and I have a suspicion that recurrence may be favoured by reticence in scraping. An experienced operator will avoid this error. The finger should always search the whole of the interior of the uterus, and any suspicious place should be scraped and afterwards dressed. Microscopical examination of the removed tissues should always be made so as to enable a reliable prognosis to be arrived at.

Besides the operative treatment indicated in morbid growths, there are other methods of treatment which yield gratifying results in the different varieties of the disorder.

In the chlorotic cases the syrup of the iodide of iron has yielded me the best results. He often combines it with tincture of nux vomica, ordering it in the following form: *R. Syr. ferri iod. Ml., tinct. nucis vom. Mx.*—misce; to be taken in water or stout three times a day. He prescribes it in this form, because if the syrup be dispensed in mixture form combined with an aqueous vehicle it soon decomposes. Should a smaller dose of the syrup be desired, the teaspoonful dose may be adhered to by adding a sufficient quantity of syrup of ginger or simple syrup to make up the fluidrachm. He has thought improvement in the blood-condition the most important thing to secure in the majority of these cases, and has been well rewarded by the results of such treatment. But with this object he not only administers iron and other hæmatinics, but prescribes exposure sunlight (sun-baths), sea-bathing, horse-exercise, and, generally, a much improved dietary, in which red meats and Burgundy figure conspicuously. Arsenic is in certain cases very helpful, but requires care in use. Chlorate of potash benefits some patients.

In all cases, from whatever cause arising, unless obviously contra-indicated, boracic acid, the sulpho-carbolates, salicyl, quinine, and iodine may be administered internally in the hope of lessening the factor. But he is bound to say that the results are not very encouraging. It may be hoped that the new agent

—boro-glyceride—may prove useful both for internal and external use. Aperients and sodorifics are occasionally helpful—*e. g.*, Turkish baths.

As regards local measures other than operative procedures (such as erosion, removal of morbid growths, and dilatation), injections and irrigations with deodorizing materials are very useful. Solutions of boracic acid, sulphurous acid gas, carbolic acid, iodine (one fluidrachm of tincture of iodine to five fluid-ounces of water, or stronger) and such like may be employed. *Intra-uterine* treatment of any kind, whether by injections or otherwise, should be employed with extreme circumspection at all times, and especially at the catamenial epochs. The intervals between the catamenia should be chosen for operative measures whenever these are indicated.

In virgins, in whom injections or similar procedures are inadmissible, and indeed in all cases, the offensive odour may be to some extent concealed and annoyance lessened by the use of charcoal in the diaper. Pieces of animal charcoal may be infolded in the diaper, or may be placed in a muslin bag, and applied in the usual manner.

Iodoform mixed with eucalyptus oil may be useful in certain cases, *e. g.*, in morbid growths; and when applied to the summit of the vagina, or near the seat of lesion, controls the trouble pretty effectually.

Pledgets of cotton-wool soaked in glycerine with boracic acid (or boro-glyceride?) are highly efficacious; they excite a watery flux, but have a decidedly sweetening influence. *Intra-uterine* medication is only to be undertaken with every precaution, and should be resorted to only in refractory cases not admitting of other means of relief.

The caution must not be omitted, that in some married patients who are thus afflicted the acrid discharges excite urethritis in the husband if intercourse be indulged in near the periods. Much mental as well as bodily distress may be thus created, and unjust suspicions aroused.—*Med. Times and Gaz.*, Nov. 4, 1882.

#### *Atrophic Ligatures of the Ovaries in order to arrest their Physiological Functions.*

The above is the title of an interesting article in No. 30, *Centralblatt für Gynäkologie*, 1882, in which Dr. Geza v. Antal urges the propriety of ligaturing one by one the ovarian arteries, instead of removing the entire ovary, and allowing the ovary to remain and atrophy from starvation. The cases recommended for its adoption are in uterine fibroid, uterine hypertrophy, versions and flexions of the uterus, in conditions of the uterus and vagina which hinder the secretion of the menses when they cannot be removed by other measures, in minor cystic degeneration of the ovaries, in ovarian displacements, in some inflammatory conditions of the ovaries where they are not deeply embedded in exudative masses. When the ovary is extensively degenerated and hypertrophied, the author allows that the procedure is inapplicable. Dr. Geza recommends the ligature of the ovarian vessels as less dangerous than removal of the ovary. Dr. Geza is entirely in favour of *intra-uterine* treatment of the stump in ovariectomy, but after removal of the tumour he recommends the vessels to be tied one by one with catgut ligatures, and the peritoneal surfaces brought together with sutures before the stump is dropped into the peritoneum. In this way a large ligature embracing the whole stump is not needed. Of 30 cases so treated by the author and others, in only one did hemorrhage supervene. In the management of the uterine stump in cases of fibroid tumour, the author strongly recommends the method of Kovács and Schröder to be followed. This may be stated briefly to consist in placing a caoutchouc ring over the lower part of the stump during operation, to prevent bleeding; then the stump is cut in a funnel-shaped fashion. The individual

arteries in the uterus and in the broad ligaments are separately tied. The peritoneal edges of the broad ligaments are brought together. The cut surfaces of the stump are finally brought together by deep sutures which include the peritoneal surfaces of the stump. To avoid the possibility of infection from the vagina, the author further recommends to obliterate the inner os by bringing the parts immediately above it into contact with catgut sutures before employing the deep sutures that unite the raw surfaces and approximate the peritoneal edges. This method of treating the stump of fibroid tumours intra-peritoneally, the author maintains, gives better results than any extra-peritoneal method.—*Edinburgh Medical Journal*, October, 1882.

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*One Hundred Consecutive Cases of Ovariectomy performed without any of the Listerian Details.*

Mr. LAWSON TAIT reports this series of cases, of which only three died; and of these, one case was fatal by accidental suffocation—so that it hardly ought to be reckoned in the mortality of the operation.

Of the patients, six were pregnant at the time of the operation; and, in one of these, there was the additional complication of acute peritonitis. All of these patients recovered, and have had their children since, with one exception; she miscarried on the second day after the operation, and then made an easy recovery.

Four of the patients suffered at the time of the operation from acute peritonitis, and all recovered. One of these was also pregnant. She carried her child to the full term, and is now in perfect health. In two cases, the disease was solid fibroma of the left ovary. Both specimens are in the museum of the College of Surgeons. In ninety-eight cases, the disease was cystoma. Of these, the tumours in eleven cases were parovarian, and the ovaries and tubes of the corresponding sides were left intact, so that the operation was not ovariectomy at all. But Mr. Spencer Wells has included these cases in his list; and, for purposes of contrast with him, everybody else must do the same. It is a grievous mistake, however, and will have to be rectified.

He has already estimated that parovarian cysts constitute about 10 per cent. of such operations, and the present series shows that he is pretty nearly right. If so, then Mr. Wells has not yet completed his "thousand cases of ovariectomy:" for over a hundred of them were probably parovarian cysts, in which healthy ovaries were unnecessarily removed.

In thirty-three of the patient, the left ovary was the seat of the disease; and in twenty-eight, the right gland was affected. Of these sixty-one cases of removal of one ovary, there were three deaths; whilst in twenty-seven cases, in which both ovaries were removed, there was nothing but uniform recovery. This demonstrates clearly that Mr. Spencer Wells's conclusion, that removal of both ovaries is more fatal than removal of one, is quite mistaken; and that the fatality can only be explained by the use of the clamp, which might reasonably be expected to have a heavier mortality when used for two pedicles than when used for one.

In more than half of the cases (fifty-three), there were serious adhesions; but it has not been found that adhesions of any kind add in any way to the mortality.

In the three fatal cases, there were no adhesions at all in two, and only slight parietal union in the third.

In seventeen of the cases, the tumours were almost sessile; and in one, so completely was this the case, that he does not know yet whether the tumour was ovarian or not, but, from its texture, he concluded that it must be.

The increased success in this series is to be attributed chiefly to: 1. The total abandonment of the clamp (Mr. Spencer Wells's) treatment of the pedicle; 2. The adoption of Keith's method of cleansing the peritoneum; 3. The adoption of Kæberle's and Keith's method of cleansing the peritoneum; 4. Increased personal experience; 5. Diminished proportion of cases which had been frequently tapped; 6. The complete abandonment of the use of carbolic acid, or any other (so-called) antiseptic system, in the performance of the operation, and in the subsequent treatment; and 7. The establishment of hospital discipline and hygiene, on the best known principles, for private as well as for public patients.—*Brit. Med. Journ.*, Oct. 28, 1882.

## MEDICAL JURISPRUDENCE AND TOXICOLOGY.

### *The Constitutional Effects of Iodoform used as a Surgical Dressing.*

KÖNIG gives (*Centralblatt f. Chir.*, Nos. 7, 8, 17, and 22) clinical details of 48 cases of poisoning by iodoform used as a surgical dressing, of which the following is a summary, somewhat condensed:—

"1. While in the great majority of cases iodoform produces no other symptom than very rapid, secretionless, and aseptic healing, there occurs in a certain proportion of cases general disturbance, which may be slight or severe, and even fatal. The disturbance consists in morbid alterations in the action of the brain and heart, and as a rule the cardiac symptoms predominate. The more severe forms are the following: (a) After sudden increase in frequency of the pulse, with diminution of its strength, there occur sleeplessness, great restlessness, delirium, hallucinations, delusions, incoherence, melancholia, refusal of food. These symptoms may quickly pass away, or may persist for weeks, and then still end in recovery, or in death from cardiac or respiratory failure. (b) After a brief stage of excitement there occur symptoms of general cerebral paralysis under the form of acute meningo-encephalitis. This is the most severe form of all, and usually terminates fatally. In both these forms autopsy discloses fatty degeneration of the heart, kidneys, and liver, while the brain may be normal, or show œdema of the pia mater or chronic lepto-meningitis.

"2. Iodoform intoxication is least often seen in children; the tendency to it increases with age. Healthy youths or adults seldom suffer, and those who do suffer are usually such as are debilitated, or have the heart's action weakened for the time, as by bleeding or long illness. The susceptibility to poisoning, the liability to the severer forms, and the danger to life, increase with age.

"3. It is not yet possible to state a minimum dangerous dose. We believe that we have evidence that it is only debilitated persons, those whose heart's action is enfeebled, especially the aged, who suffer and die from proportionally small quantities, and, further, that occasional powerful action of comparatively small doses may be explained by the solubility of the poison in the altered secretions (fatty, for instance) in such persons, and by the deficient excretory and expulsive power of the kidneys and bladder. So far as experience goes, any quantity under 10 grms. may be safely used."—*Glasgow Med. Journal*.

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FOR APRIL 1883.



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## TO READERS AND CORRESPONDENTS.

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Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of May.

Liberal compensation is made for all articles used. Extra copies, in pamphlet form with cover, will be furnished to authors in lieu of compensation, *provided the request for them be made at the time the communication is sent to the Editor.*

The following works have been received for review:—

General Pathological Anatomy. By ERNST ZIEGLER, Prof. of Path. Anat. in the University of Tübingen. Translated, with notes, by Donald MacAlister, M.B., M.D. Part I. London: MacMillan & Co., 1883.

Nerve Vibration and Excitation. By J. MORTIMER GRANVILLE, M.D. London: J. & A. Churchill, 1883.

The Relative Mortality after Amputations in Large and Small Hospitals. By HENRY C. BURDETT, Fell. of Statistical Society. London: J. & A. Churchill, 1882.

Medical Education: Introductory Address in Universities of Glasgow and Edinburgh. By W. T. GAIRDNER, M.D., Professor of Medicine in the University of Glasgow. Glasgow, 1883.

Students' Hand-Book of Forensic Medicine and Medical Police. By H. AUBREY HUSBAND, M.B., C.M. Edinburgh: E. & S. Livingstone, 1883.

A Case of Lithotomy. By REGINALD HARRISON, F.R.C.S. London, 1882.

Two New Methods of Reduction of Dislocations of the Femur and Humerus. By JAMES E. KELLY, F.R.C.S.I., M.R.I.A. Dublin, 1882.

The Laws of Life and their Relation to Diseases of the Skin. By J. S. MILTON, Lecturer at St. John's Hospital for Dis. of Skin. London: Chatto & Windus, 1882.

Deafness in Hysterical Hemianæsthesia. By G. L. WALTON, M.D.

Treatment of Acute Rheumatism. By ISAMBARD OWEN, M.D. London: J. & A. Churchill, 1883.

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Zur Frage der Behandlung der Uterus-Carcinome. Von Dr. KARL PAWLIK. Wien, 1882.

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- A Guide to Therapeutics and Materia Medica. By ROBERT FARQUHARSON, M.D. Edited by Frank Woodbury, M.D. Third edition. Philadelphia: Henry C. Lea's Son & Co., 1882.
- A System of Human Anatomy. By HARRISON ALLEN, M.D., Prof. of Physiology in Univ. of Peuna. Part 3. Muscles and Fasciæ. Philadelphia: Henry C. Lea's Son & Co., 1882.
- Diseases of the Ear. By ADAM POLITZER, M.D., Imperial Royal Professor of Aural Therapeutics in the University of Vienna. Translated and edited by James Patterson Cassells, M.D., Lecturer on Aural Surgery at the Glasgow Hospital. Philadelphia: Henry C. Lea's Son & Co., 1883.
- Early Aid in Injuries and Accidents. By FRIEDRICH ESMARCH, M.D., Professor of Surgery at the University of Kiel. Translated by H. R. H. Princess Christian. Philadelphia: Henry C. Lea's Son & Co., 1883.
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- Diseases of the Skin. By JAMES NEVINS HYDE, A.M., M.D., Professor of Skin and Venereal Diseases, Rush Medical College, Chicago. Philadelphia: Henry C. Lea's Son & Co., 1883.
- Experimental Pharmacology: A Hand-book of Methods for Studying the Physiological Action of Drugs. By L. HERMANN, Prof. of Physiology in Zürich. Translated, with additions, by Robt. Meade Smith, M.D., Demonstrator of Physiology in University of Pennsylvania. Philadelphia: Henry C. Lea's Son & Co., 1883.
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- The Crustacea of the Fresh Waters of Minnesota. By C. L. HERRICK. 1882.
- Addresses delivered at the Dedication of Cooper Medical College Building, San Francisco, 1882.
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- A Manual of Chemical Analysis as applied to the Examination of Medicinal Chemicals. Third edition, thoroughly revised and greatly enlarged. By FREDERICK HOFFMANN, A.M., Ph.D., Public Analyst of the State of New York, and FREDERICK B. POWER, Ph.D., Prof. of Analytical Chemistry in the Philadelphia College of Pharmacy. Philadelphia: Henry C. Lea's Son & Co., 1883.
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- Primary Antiseptic Occlusion in Military Practice. By H. I. RAYMOND, M.D., U.S.A. New York, 1882.
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- Methods of Treating Operative Wounds. By H. O. MARCY, M.D. Boston, 1882.
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- Parasites in the Blood of the Frog. By WM. OSLER, M.D.
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- The Relation between Diphtheria and Scarlet Fever. By A. HURD, M.D. 1883.
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- A Study of the Malformations of the Circulatory Apparatus in Man. By RANDOLPH WINSLOW, M.D. Baltimore, 1883.
- Nephrotomy for Hydronephrosis. By A. T. CABOT, M.D. Boston, 1883.
- Transactions of the Lancaster City and County Medical Society. Oct. 1882.
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- Proceedings of Medical Society of County of Kings. Jan., Feb., March, 1883.
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The following Journals have been received in exchange :—

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- Nordiskt Medicinskt Arkiv, Bd. xiv. Häft. 3, 4.
- Upsala Läkareförenings Förhandlingar, Bd. xviii. Nos. 1, 2.
- Kronika Lekarska, Nos. 18 to 24, 1882, 1 to 4, 1883.
- Annali Universali di Medicina e Chirurgia, Aug. 1882, to Jan. 1883.
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Communications intended for publication, and books for review, should be sent *free of expense*, directed to I. MUNIS HAYS, M.D., Editor of the American Journal of the Medical Sciences, care of Henry C. Lea's Son & Co., Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Messrs. Nimmo & Bain, Booksellers, No. 14 King William Street, Charing Cross, London, will reach us safely and without delay.

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The advertisement sheet belongs to the business department of the Journal, and all communications for it must be made to the publishers.

NOTE.—Drs. T. G. Morton, of Philadelphia, and Stacy B. Collins, of New York, will be obliged to any one furnishing them for publication notes of unreported cases of transfusion of blood, etc.

On sending address to Dr. Collins, 106 East 35th Street, New York City, blanks, etc., will be supplied.

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ARTICLE I.

EXPERIMENTS TO DETERMINE THE GERMICIDE VALUE OF CERTAIN THERAPEUTIC AGENTS. By GEO. M. STERNBERG, M.D., Major and Surgeon; U. S. A.

THE objects which the writer has had in view in pursuing the experimental inquiry, the results of which are recorded in the present paper have been:—

(A.) To ascertain the exact value *as germicides* of some of the agents most frequently employed in medical and surgical practice, with a view to the destruction of pathogenic micro-organisms, hypothetical or demonstrated.

(B.) To compare this value, established by laboratory experiments, with the results of clinical experience, for the purpose of ascertaining what support, if any, the germ theory of disease receives from modern therapeutics.

Evidently this support will be strong if it can be shown that the most potent germicides are the very agents which have been found—empirically or otherwise—to be the most effectual for the cure of the diseases which are supposed to be “germ diseases.” Unfortunately, no specifics have yet been discovered for a majority of these diseases—and the therapeutic data for comparison are so limited that we cannot hope, at present, to arrive at any definite conclusion.

It is believed, however, that the comparison will not be without value; and that the experimental data recorded may prove useful as a foundation for further therapeutical experiments, and also as a guide in practical sanitation.

Assuming that the infecting agent in infective material is a living micro-organism, or "germ," disinfection will be accomplished by those chemical agents, only, which have the power of destroying the vitality of this organism; and we require to know:—

(a) *What is the absolute germicide power of various disinfecting agents?*—in order to select the best with a view to economy and efficiency:

(b) *Are all disease-germs destroyed by these agents in the same proportion?* And if not:

(c) *What agents are the most available for special kinds of infective material?*

In therapeutics we should know in addition to this:—

(d) *What is the minimum quantity of each of these agents which will restrict the multiplication of each specific disease germ in a suitable culture medium?* This, with reference to medication, with a view to accomplishing a like result within the body of an infected individual.

Evidently anything like a complete answer to these questions is quite impossible in the present state of knowledge, and we must content ourselves with such partial or approximate answers as can be obtained by laboratory experiments upon the comparatively small number of pathogenic organisms which are known to science and upon the various micro-organisms which abound in organic liquids undergoing putrefaction.

The problems above formulated open a wide field for experimental study, and the first (a) has already engaged the attention of a considerable number of experimentalists, who have determined with greater or less precision the relative value of numerous germicide agents. The published results of these investigations are not, however, always in accord, although the remarkable potency of certain substances is well established—*e. g.*, sulphurous acid, chlorine, iodine, mercuric bichloride. Conflicting results are to be ascribed to imperfect methods; faulty manipulation; differences in the physical condition of material disinfected—as to aggregation, desiccation, etc.; and to differences in the vital resistance to chemical reagents of the various organisms which have served as a test.

In the present paper the writer will confine himself to a statement of his own methods and results, and no attempt will be made to review the work of others; an undertaking which would involve a great amount of labour and research, and an expenditure of time which he prefers to devote to further experimental studies.

*Method of Research.*—To accomplish the object in view a method is required by which the various micro-organisms experimented upon may be isolated and "*pure cultures*" maintained for many successive generations.

This is effected in a very satisfactory manner by the method adopted in these experiments, which had previously been thoroughly tested, and

was first described by the writer in a paper read at the Cincinnati meeting of the American Association for the Advancement of Science (August 18, 1881).

The culture-flasks employed contain from one to four fluidrachms. They are made from glass tubing of three or four-tenths inch diameter, and those which the writer has used in his numerous experiments have all been home-made. It is easier to make new flasks than to clean old ones, and they are thrown away after being once used.

Bellows operated by the foot and a flame of considerable size—gas is preferable—will be required by one who proposes to construct these little flasks for himself. After a little practice they are rapidly made; but as a large number are required the time and labour expended in their preparation is no slight matter. Considerably more than a thousand have been used in the experiments herein reported.

After blowing a bulb at the extremity of a long glass tube, of the diameter mentioned, this is provided with a slender neck, drawn out in the flame, and the end of this is hermetically sealed. Thus one little flask after another is made from the same piece of tubing until this becomes too short for further use.

To introduce a culture-liquid into one of these flasks, heat the bulb slightly, break off the sealed extremity of the tube, and plunge it beneath the surface of the liquid. The quantity which enters will of course depend upon the heat employed and the consequent rarification of the inclosed air. Ordinarily the bulb is filled to about one-third of its capacity with the culture-liquid, leaving it two-thirds full of air, for the use of the microscopic plants which are to be cultivated in it. It is best not to trust to the sterilization of the culture-liquid previously to its introduction into the flasks; for, however great the precautions taken, many failures would be sure to occur as the result of contamination by atmospheric germs during the time occupied in the manipulations.

Sterilization is, therefore, effected by heat after the fluid has been introduced and the neck of the flask hermetically sealed in the flame of an alcohol lamp.

This may be accomplished by boiling for an hour or more in a bath of paraffine or of concentrated salt solution, by which a temperature considerably above that of boiling water is secured. The writer is in the habit of preparing a considerable number of these flasks at one time and leaving them, in a suitable vessel filled with water, for twenty-four hours or longer on the kitchen stove. Here the water-bath is kept boiling at intervals, and the contents of the flasks can scarcely fail of being subjected to a temperature approaching  $212^{\circ}$  for eight or ten hours. When the time is much less than this, failures in sterilization are likely to occur, and it is best to keep on the safe side.

The flasks are next placed in a culture-oven for two or three days, at a

temperature of 95–100° Fahr. (35–38° C.), to test the success of the previous operation, sterilization. If at the end of this time the contents remain transparent, and no film—*mycoderma*—has formed upon the surface of the liquid, the flasks may be put aside for future use, and can be preserved indefinitely.

To inoculate the liquid contained in one of these flasks with organisms from any source, the end of the tube is first heated to destroy germs attached to the exterior; the extremity is then broken off with sterilized—by heat—forceps; the bulb is very gently heated so as to force out a little air; and the open extremity is plunged into the liquid containing the organism which is to be cultivated. The smallest possible quantity of this is sufficient, and as soon as the inoculation is effected the end of the tube is again sealed in the flame of an alcohol lamp. A little experience will enable the operator to inoculate one tube from another; to introduce a minute quantity of blood containing organisms directly from the veins of a living animal; to withdraw a small quantity of fluid for microscopical examination, etc., without any danger of contamination by atmospheric germs. No other method with which I am acquainted offers such security as to sterilization of the culture-fluid and exclusion of foreign germs; and a somewhat extended experience has convinced me that it has also decided advantages on the score of convenience. In prosecuting the experiments herein recorded, I have been in the habit of filling a small culture-oven with flasks of this kind piled one upon the other, each being, of course, properly labelled, and I have had no difficulty in preserving for months pure cultures of the different micro-organisms which have been the subjects of my experimental studies.

The culture-fluid which has been chiefly used in these experiments is a *bouillon* made from the flesh of a rabbit. Beef-tea has also been used to some extent. All of the micro-organisms experimented upon multiply freely in the first-mentioned fluid, and beef-tea is a suitable culture-medium for all except the septic micrococcus.

The smallest quantity of fluid containing these micro-organisms, introduced into one of the little flasks containing sterilized *bouillon*, causes this to “break down” within twenty-four hours, if in the mean time it is exposed to a proper temperature.

My culture-oven has been kept as nearly as possible at a temperature of 100° Fahr. If a flask, which has been inoculated with living micrococci or other bacterial organisms, be examined after remaining twenty-four hours in the culture-oven, it will be apparent at a glance that a change has taken place in its liquid contents, which, instead of being transparent, have become opalescent or even milky in appearance. The smallest quantity of this fluid, examined under the microscope, will be found to contain a multitude of spheres or rods like those introduced, *as seed*. But if the vitality of the bacterial organisms introduced has been

destroyed prior to inoculation, by heat or by a chemical reagent, there will be no change in the contents of the flask, and the sterilized *bouillon* will remain transparent for an indefinite period.

To test the *germicide* power, then, of a chemical reagent, living bacteria are subjected to its action, in a known proportion, for a given time, and are subsequently used to inoculate sterilized *bouillon* in a culture-flask.

Failure to multiply in this fluid, when exposed for twenty-four hours or more to a temperature of 100° Fahr., is evidence that reproductive power—vitality—has been destroyed by the reagent used. On the other hand, failure to disinfect, *i. e.*, to destroy the vitality of the bacterial organisms used as a test, is shown by the “breaking-down” of the culture-fluid.

In the experiments herein recorded, failure to disinfect is indicated by a full-faced figure representing the *percentage* in which the disinfectant was used. The plain figure indicates failure to multiply in sterilized *bouillon*, or destruction of vitality by the agent used. Thus, the figures 1 and 0.5, used with reference to the germicide power of carbolic acid, for example, indicate that the bacterial organisms experimented upon failed to multiply after being exposed to the action of one per cent. of this reagent, and that they did multiply after exposure to five-tenths per cent. In other words, one per cent. killed and five-tenths per cent. did not.

The mode of operating, in detail, is as follows:—

Standard solutions of the reagents to be tested are prepared with distilled water.

Glass tubes, two or three inches long, closed at one end, are made from tubing of about one-fourth inch diameter.

The “germs” are exposed to the action of the germicide agent in these tubes, which are supported in perforated corks, and covered with a bell-glass during the time of exposure.

In the experiments herein reported, the time of exposure to the action of the germicide agent was *two hours*. This is an important point, and one which must be borne in mind in comparing the results obtained with those reported by others. For it is evident that the vital resistance of the micro-organisms might be overcome by a more prolonged exposure; or that the germicide power of the reagent might be inadequate if the time allowed for its action were less.

The glass tubes are thoroughly sterilized in the flame of an alcohol lamp immediately before each experiment.

At the expiration of the time of exposure adopted as a standard, a small quantity of the fluid from one of these tubes is introduced into a culture-flask containing sterilized *bouillon*, and this, after being properly labelled, is placed in the culture-oven. This inoculation of the fluid in



one of the little flasks with organisms which have been exposed in one of the small glass tubes to the action of a chemical reagent, is very expeditiously accomplished. Experience proves that atmospheric germs do not gain admission to the interior of the flask during the operation, and that the results obtained are entirely trustworthy. This becomes apparent when these results are carefully considered; and *it will be found that while our preconceived notions may not in all cases be sustained, yet the results as a whole bear ample testimony to the reliability of the method.*

Thus, for example, nine experiments were tried with sodium borate, three different micro-organisms being used to test its germicide potency. And in every case the result was a failure, as shown by the breaking down of the culture-liquid inoculated with these organisms, after exposure to the reagent, in the percentage indicated below:—

<i>Micrococcus of pus</i> . . . . .	4. 2. 1.
<i>Septic micrococcus</i> . . . . .	4. 2. 1.
<i>Bacterium termo</i> . . . . .	4. 2. 1.

If these experiments stood by themselves, the objection might be raised that the breaking down of the culture-liquid was due to the accidental admission of atmospheric germs, and not to the organisms purposely introduced. But look at the following results obtained with mercuric bichloride, the time of exposure and method of manipulation being exactly the same:—

<i>Micrococcus of pus</i> . . . . .	0.5, 0.25, 0.2, 0.1, 0.05, 0.02, 0.01, 0.005, 0.0025, 0.00125.
<i>Bacterium termo</i> . . . . .	1., 0.5, 0.25, 0.2, 0.1, 0.05, 0.025, 0.02, 0.01, 0.005.

Here the agent used was efficient in all proportions above 0.005 per cent. for *B. termo* and 0.0025 per cent. for the *micrococcus of pus*.

Evidently the uniform failure in the first case, sodium borate, was not due to an accident which did not once occur in the large number of experiments made with mercuric bichloride. Again, take the following experiments with carbolic acid:—

<i>Septic micrococcus</i> . . . . .	1., 0.5, 0.5, 0.25, 0.25, 0.25, 0.12.
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Here, if we leave out experiment No. 5, we find a line very distinctly drawn between 0.5 per cent. and 0.25 per cent. In the proportion of one per cent. and of five-tenths per cent. (experiment in duplicate), this agent destroyed the vitality of the septic micrococcus; while in the proportion of twenty-five-hundredths per cent. (experiment in duplicate) and below, it failed to do so.

But how shall we explain the exception to this result which we have in the case of experiment No. 5? The explanation is easy, and the writer is only surprised that apparent contradictions of this kind have not been

more common. The aim has been to ascertain approximately the minimum quantity of each agent which would destroy the vitality of bacterial organisms, and no attempt has been made to render the conditions of the experiments *absolutely exact*. In so large a number of experiments, this would have added very much to the magnitude of the task undertaken. Thus, in diluting the standard solutions, which were carefully made in the first instance, it has been the custom of the experimenter to prepare, for example, three sterilized tubes; to fill one nearly full; to fill a second half full (by the eye); and a third one-fourth full. These tubes are then filled with a culture-liquid containing the organisms (usually from a culture-flask, in which they have developed during the preceding twenty-four hours). Suppose that the standard solution contained 4 per cent. of the reagent; then tube No. 1 would contain 4 per cent. nearly (a small drop only of the culture-fluid is added to this), tube No. 2 would contain 2 per cent., and tube No. 3 1 per cent. Moreover, the time of exposure necessarily varies somewhat. While two hours has been the standard time adopted, circumstances have sometimes made it impossible to conform strictly to this time, which has not infrequently been exceeded by a half-hour or even more than this. Contradictory results, then, occurring only on the boundary line between the percentage of a reagent which kills and that which fails, are fully explained and were *a priori* to have been anticipated.

In the experiments designed to determine the minimum quantity of a reagent which will prevent the multiplication of bacteria in a suitable culture-medium, the reagent was added to the culture-liquid in a definite proportion before this was introduced into the culture-flask. Sterilization was then accomplished in the usual way, by boiling, and the test was made by inoculating with bacteria from a fresh culture, and placing the flask, as before, in the culture-oven. If no development occurs, it is evidently because of the restraining influence of the reagent introduced; and by varying the proportion of this in a series of experiments, the minimum quantity which will effect this result is finally obtained.

*Bacterial Organisms used in Research.*—The micro-organisms which have been used in the experiments herein reported to test the germicide power of the reagents named, were obtained from the following sources:—

a. A micrococcus from gonorrhœal pus, the characters of which are described in detail in a paper published in *The Medical News* (Jan. 20 and 27, 1883).

b. A micrococcus from pus obtained from an acute abscess—whitlow—at the moment that it was opened by a deep incision. This micrococcus is morphologically identical with the preceding, and the writer has no evidence that it is a different species or that it was the cause of the deep-seated inflammation which resulted in the formation of an abscess.

c. A pathogenic micrococcus, having distinct morphological characters,

obtained from the blood of a septicæmic rabbit (septicæmia induced by the subcutaneous injection of human saliva).<sup>1</sup>

*d. Bacterium termo* and other bacterial organisms—micrococci and bacilli—from “broken-down” beef-tea which had been freely exposed to the air.

Pure cultures of the micrococci *a*, *b*, and *c* were obtained from the sources mentioned, and were maintained through a succession of culture-flasks without difficulty by the method already described. In a few instances, however, out of a very large number of experiments, microscopical examination has shown that bacteria other than those under cultivation have accidentally obtained admission to the culture-flasks. In this case fresh cultures were at once started, from pure stock kept constantly in reserve for this purpose, in hermetically sealed flasks.

In the experiments with broken-down beef-tea (*d*), no effort was made to exclude atmospheric germs, as these experiments were intended to show the minimum quantity of the reagents used which would destroy *all* bacteria developed in an organic solution freely exposed to the air.

These experiments have occupied a considerable portion of the writer's time during the past six months, and have been made with all the care possible. The results in many cases are quite different from what was anticipated. But in every case a sufficient number of experiments has been made to show that preconceived opinions, based upon the reputation of certain agents as disinfectants, were erroneous when in conflict with the results reported, and that these are entirely reliable.

**RESULTS OF RESEARCH.**—The results obtained will be given in tabular form. In Table No. 1 all experiments are given in which the micrococcus from pus was used as a test. But as there may be some question as to the identity of the micrococcus from gonorrhœal pus with that of pus obtained from an acute abscess, notwithstanding their morphological resemblance, the experiments in which micrococci from the first source were used will be designated, *a*, and those from the second, *b*. It will be remembered that the figures represent the percentage in which the chemical reagent was used; that the plain figure indicates destruction of vitality, as proved by failure to multiply; and that the full-faced figure indicates failure of the germicide agent, as proved by the subsequent multiplication of the micrococci subjected to its action. The time of exposure was two hours. The figures are arranged in the order in which the experiments were made, and this is an ascending or descending scale according as the first trials were above or below the limit which the experiments

<sup>1</sup> The following references are to papers by the writer relating to this septic micrococcus: Bulletin of the National Board of Health, April 30, 1881; Studies from the Biological Laboratory, Johns Hopkins University, vol. ii. No. 2, pp. 183-200; Medical Times, Philadelphia, Sept. 9, 1882, p. 837; Ibid. Nov. 4, 1882, p. 80; The Medical News, Philadelphia, July 8, 1882, p. 53; Ibid. Sept. 16th, p. 333.

were designed to establish, viz., the minimum quantity of each agent which will destroy the vitality of the micrococcus adopted as a test, in the time mentioned.

TABLE I.—*Experiments to determine the germicide value of the reagents named (arranged alphabetically).*

Alcohol (a)	25, 50, 95.
“ (b)	40, 20.
Arsenite of potassa (Fowler's solution)	4, 8, 10, 20, 20, 40.
Boracic acid (a)	0.5, 1, 1, 2, 4.
Carbolic acid (a)	2, 1.25, 1, 0.8, 0.5, 0.5.
“ “ (b)	0.5.
Caustic potash (b)	2, 4, 4, 8, 10, 20.
Chloral hydrate (b)	5, 5, 10, 10, 20.
Citric acid (b)	6, 6, 10, 12.
Creasote (b)	1, 0.5, 0.5, 0.25.
Ferric sulphate (a)	4, 8, 16.
Ferri chloridi tincturæ (a)	0.25, 0.5, 1, 1, 2, 2, 4, 4.
Hydrochloric acid (b)	1, 0.5, 0.25.
Iodine, dissolved by means of potassium iodide q. s. (a)	0.5, 0.2, 0.2, 0.1, 0.1, 0.05, 0.025, 0.02, 0.02, 0.01, 0.01, 0.005, 0.005, 0.005, 0.0025, 0.0025.
“ “ (b)	0.00125.
Potassium iodide (a)	1, 2, 4, 8.
Potassium permanganate (b)	4, 2, 1, 0.5, 0.25, 0.12, 0.12, 0.06.
Salicylic acid and sodium baborate, equal parts (a)	0.5, 1, 2, 2, 4.
Sodium baborate (a)	1, 2, 4.
Sodium salicylate (a)	1, 2, 4.
Sulphuric acid c. p. (a)	1, 0.5, 0.5, 0.25, 0.25, 0.1.
Sodium hyposulphite (a)	2, 2, 4, 4, 8, 16, 32.
Sodium sulphite exsiccata (a)	2, 4, 5, 10.
Zinc chloride (a)	2, 2, 1, 0.5.
Zinc chloride liquor (Squibb's) (b)	1, 2, 4, 4, 8.
Zinc sulphate (b)	2, 4, 8, 20.

It will be noticed that a considerable number of reputed disinfectants and many approved therapeutic agents which may be supposed to act as germicides do not appear in this list. This is not because they have been overlooked, but the labour involved in a series of experiments of this nature is so great that the writer has been obliged to make a selection and to leave to others who may have better facilities for pursuing work of this kind, the task of completing the list, if it seems to them worth while to do so.

Upon inspecting Table I. we find a few reagents which have very decided germicide power, while the greater number, including several which are commonly believed to be efficient *disinfectants*, e. g., ferric sulphate, boracic acid, sodium hyposulphite, exhibit very little potency or none at all.

Rearranging the list according to the germicide value of the agents named we have the following:—

TABLE II.

		Efficient in the proportion of
Mercuric bichloride (0.005 per cent.)	one part in	20000
Potassium permanganate (0.12 per cent.)	" "	833
Iodine (0.2 per cent.)	" "	500
Cresote (0.5 per cent.)	" "	200
Sulphuric acid (0.5 per cent.)	" "	200
Carbolic acid (1 per cent.)	" "	100
Hydrochloric acid (1 per cent.)	" "	100
Zinc chloridi (2 per cent.)	" "	50
Tinct. ferri chloridi (4 per cent.)	" "	25
Salicylic acid dissolved by sodium borate (4 per cent.)	" "	25
Caustic potash (10 per cent.)	" "	10
Citric acid (12 per cent.)	" "	8
Chloral hydrate (20 per cent.)	" "	5

The following named reagents, as far as the experiments go, are not shown to have any germicide value, viz. :—

Fowler's solution (arsenite of potassa)	failed in the proportion of	40 per cent.
Sodium hyposulphite	" " "	32 "
Sodium sulphite, exsiccata	" " "	10 "
Ferric sulphate (saturated solution)	" " "	16 "
Potassium iodide	" " "	8 "
Liq. zinci chloridi	" " "	8 "
Zinc sulphate	" " "	20 "
Boracic acid (saturated solution)	" " "	4 "
Sodium borate (saturated solution)	" " "	4 "
Sodium salicylate	" " "	4 "

Having ascertained the germicide value of certain reagents for a single micro-organism, the question arises as to whether we are justified in assuming that other organisms of the same class, and especially pathogenic bacteria, will be destroyed by the same reagents in like proportion. Or, in other words, whether we can generalize from the data obtained. It is evident that if each of the reagents named gives identical results with several distinct species of bacteria we will be justified in assuming that the value obtained will be constant for other organisms, known or unknown, of the same class. Whereas, if marked differences are found, as to the vital resistance of different bacterial organisms to these reagents, no generalization will be possible; and the value for each distinct organism of the class can only be fixed by experiment. To solve this question experiments have been made as follows:—

(a) Upon the *micrococcus of pus* (already reported in Table I.).

(b) Upon the *micrococcus of septicæmia* in the rabbit.

(c) Upon *bacterium termo*, in its active motile stage, as found in a fresh culture.

(d) Upon the bacteria in broken-down beef-tea which had been freely exposed to the air, and in which all active development had ceased. The results of these experiments are given in the following table.

TABLE III.—*Experiments to determine the Germicide Value of the Reagents named.*

Reagent.	(a.) M. of pus.	(b.) M. of septi- cemia.	(c.) B. termo.	(d.) Broken- down beef-tea.
Mercuric bi- chloride	0.005, 0.005, 0.005, 0.0025, 0.0025, 0.00125, 0.0025	0.005, 0.005, 0.0025, 0.0012	0.01, 0.005	0.01, 0.005
Iodine dissol- ved by potas- sium iodide	0.2, 0.2, 0.1, 0.1, 0.05	0.2, 0.1, 0.1, 0.05, 0.025	0.2, 0.1, 0.05	0.25, 0.2, 0.12, 0.12
Sulphuric acid	0.5, 0.5, 0.25, 0.25, 0.1	0.25, 0.25, 0.12, 0.06, 0.025	1, 0.5, 0.25	1, 2, 4, 4
Carbolic acid	1, 0.8, 0.5, 0.5	0.5, 0.5, 0.25, 0.25	1, 1, 0.5, 0.5	1, 2, 4, 4, 4
Zinc chloride	0.5, 1, 2, 2	0.5, 1		
Tr. ferri chloridi	1, 2, 2, 4, 4	1, 2, 2, 4, 4	1, 2, 4	
Salicylic acid and sodium baborate, equal parts	1, 2, 2, 4	1, 2, 2, 4	1, 2, 2, 4	4
Caustic pot- ash	4, 8, 10, 20	1, 1, 2, 2, 4		8, 10, 20
Alcohol	20, 25, 40, 95	6, 12, 24, 25, 50	25, 50, 95	95 (24 hrs.) 95 (48 hrs.)
Sodium hy- posulphite	8, 16, 32	4, 8	8, 16, 32	Saturated.
Sodium sulph. exsiccata	5, 10	5, 10	5, 10	Saturated.
Ferric sul- phate	4, 8, 16	8, 16	8, 16	Saturated.
Potassium iodide	2, 4, 8		4, 8	Saturated.
Boracic acid	1, 2, 4	1, 2, 4	1, 2, 4	
Sodium bi- borate	1, 2, 4	1, 2, 4	1, 2, 4	
Sodium sali- cylate	1, 2, 4	1, 2, 4	1, 2, 4	

An inspection of the table shows that, in general, those reagents which destroyed the vitality of the micrococcus from pus (Table I.) are destructive of other organisms of the same class; and that their relative value as germicides (as shown in Table II.) is not changed when a different micro-organism is used as the test of this value. Moreover, the reagents which were found to be practically valueless as germicides in the first series of experiments, *e. g.*, ferric sulphate, sodium sulphite and hyposulphite, boracic acid, etc., proved to be equally without value when the test was extended to other micro-organisms of the same class. But the reagents found to possess decided germicide power have, in some cases, a different value for different organisms. In other words, the vital resistance of different bacterial organisms to the reagents in question is not in all cases the same.

Thus, *iodine* failed to destroy the vitality of *B. termo* and of the micrococcus from pus in the proportion of 0.1 per cent.; while the septic micrococcus was destroyed by 0.1 per cent., but not by one-half of this amount (0.05 per cent.).

*Sulphuric acid* failed to destroy *B. termo* and the micrococcus from pus in the proportion of 0.25 per cent.; but one-fourth of this amount (0.06 per cent.) destroyed the vitality of the septic micrococcus.

*Carbolic acid* failed to destroy the micrococcus from pus in the proportion of 0.5 per cent.; but this amount was fatal to the septic micrococcus.

*Zinc chloride* failed to destroy the first-named micrococcus in the proportion of 1 per cent.; but one half this amount was fatal to the pathogenic micrococcus, septic.

*Caustic potash* destroyed the septic micrococcus in the proportion of 2 per cent., but failed to kill the micrococcus of pus in four times this amount (8 per cent.).

*Tr. ferri chloridi* killed the two species of micrococcus in the proportion of 4 per cent., but failed to destroy *B. termo* in this proportion.

*Alcohol* destroyed the vitality of the septic micrococcus in the proportion of 24 per cent., and the micrococcus from pus in the proportion of 40 per cent.; but 95 per cent. did not kill *B. termo*; and the bacteria from broken-down beef-tea were not killed by being immersed in 95 per cent. alcohol for forty-eight hours.

When we compare the vital resistance of the organisms in the first three columns with that of those from broken-down beef-tea which had been standing for a considerable time in the laboratory in an uncorked bottle, we find a very marked difference, especially with certain reagents. Thus, both sulphuric acid and carbolic acid, in the proportion of 4 per cent., failed to sterilize this broken-down beef-tea; while 1 per cent., or less, was fatal to *B. termo* in a state of active growth and to the two species of micrococcus. This difference is not as marked, however, in the case of

mercuric bichloride and of iodine, and it is evident that we have in these substances germicide agents of the highest value.

As disinfectants, these reagents may be safely recommended for the destruction of all "germs" of the character of those employed as a test in these experiments, *i. e.*, bacterial organisms and reproductive spores of the same.

The proportion in which they would certainly be efficient may be given as 0.02 per cent., or one part in five thousand for mercuric bichloride; and 0.5 per cent., or one part in two hundred for iodine.

The poisonous properties and want of colour of a solution of corrosive sublimate of the proper strength, make this of doubtful utility for general use in the sick-room; but in iodine we have an agent which might be used in aqueous solution with potassium iodide, for disinfecting spittoons, bed-pans, etc.

The experiments with potassium iodide show that this salt has no germicide value of its own.

The value, as a *germicide*, of the solution of ferric sulphate and sulphuric acid, in water, which has been extensively recommended by sanitarians as a *disinfectant*, evidently depends upon the sulphuric acid which the solution contains. To insure the destruction of all bacterial organisms and of the reproductive spores of those species which multiply by spores as well as by transverse fission, such a solution should be used in sufficient quantity to subject the material to be disinfected to the action of the acid in the proportion of at least 5 per cent. for a period of two hours.

The quantity of carbolic acid used to accomplish the same result should not be less than this, 5 per cent.; for it is necessary to keep on the safe side, and we do not know at present whether all of the pathogenic bacteria, hypothetical or demonstrated, form spores or otherwise. In the case of the anthrax bacillus and of Koch's bacillus of tuberculosis, this has been proved to be true; and we have ample experimental evidence to show that these reproductive bodies possess very great resistance to heat and to those chemical reagents which destroy bacterial organisms in their ordinary condition of rapid growth and multiplication by fission.

These remarks, relating to the practical value as disinfectants of the reagents which have been the subject of the experiments herein reported, are made *en passant*, the main object in view having reference rather to the value of these reagents in medical and surgical practice, either as germ destroyers or as capable of restricting germ multiplication within the living body and in surgical lesions.

Evidently therapeutic value—assuming the correctness of the germ-theory—cannot be gauged by germicide power alone, for it is possible that a reagent which possesses this power in but slight degree, or not at all, may nevertheless be capable of *restricting the development* of pathogenic organisms, and thus limiting their power for mischief.



To judge of the therapeutic value of a reagent from this point of view, we should know the minimum quantity which will prevent the development of germs. Using as a test the same organisms as in previous experiments and the method already described (p. 322), we have the following results:—

TABLE IV.—*Experiments to determine the Minimum Quantity of the Reagents named which will Prevent the Development of Bacterial Organisms.*

Reagent.	M. of pus.	Septic M.	B. termo.
Mereuric bichloride	0.012, 0.006, 0.003, 0.0015	0.005, 0.0025, 0.0012	0.012, 0.006, 0.003, 0.003, 0.0015
Iodine	0.05, 0.025, 0.012, 0.025	0.025, 0.012 0.006	0.05, 0.025, 0.012, 0.025, 0.012
Sulphuric acid	0.25, 0.12, 0.06, 0.03	0.25, 0.12, 0.12, 0.06, 0.06, 0.03, 0.03	0.25, 0.12, 0.06, 0.03
Carbolic acid	0.2, 0.2, 0.1, 0.1, 0.05, 0.05	0.2, 0.1, 0.05	0.2, 0.1, 0.05
Salicylic acid and sodium bichlorate, equal parts	1, 0.5, 0.25, 0.125	1, 0.5, 0.25, 0.12, 0.12, 0.12, 0.06	1, 0.5, 0.25, 0.12
Sodium hyposulphite	0.5, 1, 2, 2, 4, 8	0.5, 1, 2, 4, 8	
Ferric sulphate	4, 2, 1, 0.5, 0.5, 0.25, 0.12, 0.06	0.5, 0.25, 0.12	4, 2, 1, 0.5, 0.5, 0.25, 0.12, 0.06
Boric acid	0.5, 0.25, 0.12	1, 0.5, 0.25, 0.12, 0.06	0.5, 0.25, 0.12
Sodium bichlorate	2, 1, 0.5, 0.5, 0.25	1, 0.5, 0.25, 0.12, 0.06	1, 0.5, 0.25, 0.12
Alcohol	20, 10, 5, 5	2.5, 2.5, 5	

We note, first, that the results are pretty uniform for the three different organisms. Thus, in the case of ferric sulphate, 0.5 per cent. and above prevented multiplication of each of the test organisms (experiment in duplicate for M. of pus and B. termo), while 0.25 per cent. and below failed in every instance. In the case of sulphuric acid, 0.12 per cent. prevented multiplication, and 0.06 per cent. failed in every instance except one. In two experiments in which this proportion of the reagent was used, the test being the septic micrococcus, a contradictory result was obtained. This was also the case in two of the experiments with iodine, 0.025 and 0.025 (first column), and in two of those with mereuric bichloride, 0.003, 0.003 (third column). As already explained (p. 327), these contradictory results are to be attributed to the fact that the per-

centage of the reagent is on the boundary-line between success and failure, and that the time of exposure to the action of the reagent has not in all cases been exactly the same. This explanation will not answer, however, for the difference in susceptibility shown to the action of boracic acid, sodium bichloride, and salicylic acid dissolved by means of sodium bichloride, for with each of these reagents a smaller proportion prevents development in the case of *B. termo* than in that of the micrococcus from pus. We have already seen that these reagents in a saturated solution (4 per cent.) possess no germicide value, but we now see that *they are nevertheless potent antiseptics, by virtue of their power to prevent the development of septic organisms*, and that this power is more decided in the case of *bacterium termo*, which is essentially a putrefactive organism, than in that of the micrococcus of gonorrhœal pus, which we believe to be identical with *M. ureæ* (Colin). (See paper published in *The Medical News*, l. c.)

Comparing now the quantity of each reagent required to destroy vitality with the minimum quantity which will prevent development, we have for the micrococcus of pus the following figures (taken from Tables I. and IV.):—

TABLE V.

Reagent.	Percentage required to destroy vitality.	Percentage capable of preventing development.
Mercuric bichloride . . . . .	0.005, 0.0025	0.003, 0.0015
Iodine . . . . .	0.2, 0.1	0.025, 0.012
Sulphuric acid . . . . .	0.25, 0.25, 0.1	0.12, 0.06
Carbolic acid . . . . .	0.8, 0.5	0.2, 0.1
Salicylic acid and sodium bichloride	4, 2, 2	0.5, 0.25
Alcohol . . . . .	20, 25, 40, 95	20, 10, 5, 5
Sodium hyposulphite . . . . .	32	4, 8
Ferric sulphate . . . . .	16	0.5, 0.25
Boracic acid . . . . .	4	0.5, 0.25
Sodium bichloride . . . . .	4	1, 0.5, 0.5

An inspection of the table shows that the potent germicides in our list restrict multiplication in quantities considerably less than are required to destroy vitality. In the case of iodine, the difference is eightfold; in that of carbolic acid, fourfold; in that of sulphuric acid, twofold, etc.

We also see that the three agents at the bottom of the list—ferric sulphate, boracic acid, and sodium bichloride—in the proportion of five-tenths per cent. prevent the multiplication of bacterial organisms, and are consequently antiseptic agents of value, although in saturated solution they fail to kill these organisms.

In the case of ferric sulphate, and also of zinc sulphate and zinc chloride, this power to prevent the development of micro-organisms seems to be due to precipitation of the organic material in the nutritive medium rather than to any direct action upon the living organisms, which, as we have seen, are not killed by a far greater quantity of the reagent.

This explanation will not answer for borax and boracic acid, as these reagents do not cause a precipitation of the albuminoid material in the *bouillon* used as a culture-fluid.

Let us now consider the therapeutic possibilities from the point of view we have taken, as regards the different reagents which have been selected for this research; and, comparing these with the results of clinical experience, let us inquire whether the "germ theory" receives any support from the experimental data recorded.

*Mercuric Bichloride.*—The value of this potent agent as a parasiticide for external use is well established. The question now under consideration is whether it is practicable to use it in sufficient quantity to take advantage of its germicide power for the purpose of destroying or restricting the development of internal parasites located in the blood, or in the tissues, *e. g.*, the bacillus of tuberclosis(?), the bacillus of syphilis(?), etc. etc.

The proportion in which this reagent prevents the development of the septic micrococcus is 0.0025 per cent. equal to one part in 40,000. It is probable that a proportion considerably below this may have some restraining influence, and, perhaps, some of the pathogenic organisms are more susceptible than this micrococcus to its action. But, reasoning from the experimental data at hand, let us see if the required amount could be administered medicinally.

Physiologists estimate the blood to constitute one-eighth of the weight of the body, which for a man weighing one hundred and sixty pounds would amount to twenty pounds. The quantity of mercuric bichloride required to prevent the development of the septic micrococcus in this amount of blood would be three and one-half grains.

"The dose of corrosive sublimate is from the twelfth to the quarter of a grain repeated three or four times a day." (*U. S. Dispensatory.*) "The smallest dose which is reported to have destroyed life is three grains. This was in the case of a child." (*Taylor's Medical Jurisprudence*, p. 130.)

Probably one grain per day is the maximum quantity which could be administered medicinally for several days in succession, and it is evident that the amount required to obtain the germicide action of the reagent upon parasitic micro-organisms in the blood or in the tissues could not be obtained by these doses, unless there is an accumulation in the system from incomplete elimination of the poison. That this is the case has been demonstrated by experiment.

"If treatment have been continued some time, mercury may be found in the urine for several days afterward; thus, in the urine of two patients who took  $\frac{1}{2}$  grain daily for ten or twelve days, the drug was found for four or five days after treatment had been omitted. . . . Years after its prolonged administration unusual perspiration may develop dark mercurial stains on the linen. . . . I have myself seen five patients while under the influence of nitric acid, suffer from salivation and other physiological symptoms of mercury, and none of these had taken that drug for over eighteen months previously: I considered it clearly traceable to mercury in the system and not to the acid." (*Phillips's Materia Medica and Therapeutics*, vol. ii. p. 191.)

In view of these facts it is not difficult to believe that the bichloride may be introduced into the system in quantities sufficient to restrain the development of parasitic micro-organisms, and we will have a satisfactory explanation of the *modus operandi* of this remedy in syphilis, if this is eventually demonstrated to be a "germ" disease.

*Diphtheria*.—A medical friend, who has just returned from Vienna, informs me that mercuric bichloride is at present the favourite remedy in that city for diphtheria.

*Enteric Fever*.—"Several eminent physicians abroad—Traube, Wunderlich, Liebermeister, and others—have recently recommended a 'specific' treatment for the first nine days of this fever by calomel. They claim for these doses an antipyretic effect, and a power of lessening both the duration and mortality of the disease." (*Medical Times*, ii. 1876.) . . . "Corrosive sublimate in minute quantities has also proved valuable in typhoid diarrhœa." (*Materia Medica and Therapeutics*, Phillips, vol. ii. p. 217.)

*Erysipelas*.—"In many cases of phlegmonous erysipelas, especially when occurring in strumous subjects, I have found the internal administration of corrosive sublimate distinctly useful." (Phillips, *l. c.*, p. 217.)

*Dysentery*.—"In acute dysentery, with violent pain, severe prostration and frequent muco-sanguineous stools, small doses of corrosive sublimate given at short intervals, commonly relieve in a few hours, and almost in a 'specific' manner." (Phillips, *l. c.*, p. 222.)

These quotations suffice to show that this potent germicide agent, notwithstanding the reaction against mercurials which has occurred during the past thirty years, has a prominent place in modern therapeutics as a remedy for the very diseases which there is the most reason to believe are produced by parasitic micro-organisms.

*Iodine*.—The quantity of iodine required to prevent the development of the test organisms was the same for all three, viz., 0.025—or one part in four thousand. The same computation made in the case of mercuric bichloride gives us thirty-five grains as the quantity which would be required to prevent the development of these organisms in the blood of an adult weighing 160 pounds. In a culture-fluid containing one half this amount, all of the test organisms multiplied abundantly. It is evident, therefore, that to restrict the multiplication of pathogenic organisms of the same class, in the blood or in the tissues, doses would be required which it is entirely impracticable to administer. For iodine is rapidly eliminated by the kidneys, and the maximum dose which can be given with safety is very far below this amount.

The dose of liquor iodinii compositus is six drops, containing about a quarter of a grain of iodine, three times a day. The dose of the tincture is from ten to twenty drops, which may be gradually increased to thirty or forty drops three times a day. (*U. S. Dispensatory*.) The alkaline iodides, however, may be given in enormous doses. Thus, iodide of potassium has been given in doses of two, four, or even six drachms daily, without inconvenience (*loc. cit.*). But as our experiments show that this salt has no germicide power its recognized value in syphilis and in

tubercular meningitis cannot be accounted for upon the hypothesis that it restrains the development of the germs of these diseases, unless it can be shown that it is decomposed in the system and that the iodine is set free.

In syphilitic cases which have previously been subjected to a mercurial course, it is known that decomposition does take place, and the beneficial action of the iodide is ascribed by some to its power to render active the mercury stored away in the tissues. But as cases not previously treated with mercury are also benefited (Van Buren and Keyes), this explanation is not sufficient.

In iodoform we have an agent which permits of the introduction of iodine into the system in larger doses than are tolerated when the element is given uncombined in the form of tincture or in solution with potassium iodide. And we have evidence that this substance is not eliminated so readily as is the potassium salt, and that it is decomposed within the body. Still it does not seem practicable to administer it in sufficient quantity to take advantage of the germicide power of iodine for the destruction of pathogenic bacteria in the blood or tissues. Clinical experience is in accord with our experimental data in this regard; for iodine is confessedly not a *specific* in those diseases in which it has the greatest reputation as a remedy of value—*e. g.*, phthisis, scrofula, syphilis. Its therapeutic applications are largely local rather than general, and admit of its use in quantities sufficient to kill germs—*e. g.*, as a local application in erysipelas, in diphtheria, and by inhalation, in phthisis.(?)

The benefit said to be derived from the administration of tincture of iodine in intermittent fever may also be due to its local action in destroying "malarial germs" in the alimentary canal.

*Sulphuric Acid.*—As the normal reaction of the blood is alkaline, we cannot hope to introduce medicinally a mineral acid into this fluid for the purpose of destroying germs in it, or in the tissues through which it circulates. The germicide power of sulphuric acid, then—which is about equal to that of iodine—is even less available for internal use than is that of the last-named reagent; that is to say, for internal administration with reference to a general effect. But for the destruction of pathogenic organisms in the alimentary canal, this acid should be available and useful. That it is so is indicated by the following quotations from a recent treatise upon Therapeutics (Phillips, *loc cit.*):—

"Dilute sulphuric acid has a well-deserved reputation in various forms of intestinal flux, and especially in summer diarrhœa of a choleraic character."

"*Cholera.*—Dr. Curtin has recorded that a severe epidemic in an institution under his direction ceased within twelve hours after the inmates were treated with sulphuric-acid lemonade."

"In the diarrhœa of enteric fever. H. Kennedy, Murchison, and other authorities, advocate the use of sulphuric acid."

Aromatic sulphuric acid has been recommended in epidemic dysentery (*U. S. Dispensatory*). It seems not at all improbable that the benefit

derived from this and other mineral acids, in the above-mentioned diseases; is in great part due to their germicide power; for there can be very little doubt that diseases of this nature are due, directly or indirectly, to the vital activity of living ferments.

*Carbolic Acid.*—The experimental data recorded do not favour the idea that in carbolic acid we have a cure-all for germ-diseases any more than in iodine, or in sulphuric acid; and all of these reagents fall far below mercuric bichloride, which, so far as our experiments go, is the only remedy which approaches the rank of a panacea from this point of view. But the demonstrated potency of carbolic acid as a germicide is in accord with its recognized value as an antiseptic in surgical practice, and its anæsthetic and non-irritating properties give it special advantages over the agents previously mentioned for external use.

Carbolic acid has been administered with success in intermittent fever and in dysentery. Its beneficial action in these diseases is very possibly due to its germicide power. For, like sulphuric acid, it may be introduced into the alimentary canal in quantities which may justify us in believing that pathogenic organisms in the *primæ viæ* would be destroyed by it; although it seems quite out of the question to restrict the development of parasitic bacteria in the blood with an agent which fails to prevent the multiplication of the septic micrococcus in a culture-fluid in which it is present in the proportion of one part in a thousand. The quantity which should be present in the blood of our standard adult, weighing 160 pounds, to accomplish the desired purpose, would be considerably above half an ounce of the pure acid.

If, then, hypodermic injections of a few grains have a beneficial effect in "germ diseases," it must be for some reason independent of the germicide power of the agent.

*Salicylic Acid.*—In my experiments with this reagent it has been dissolved by means of sodium biborate, which, by itself, in saturated solution, has no germicide power. A two per cent. solution was found to destroy the vitality of the micrococcus of pus, and in the proportion of five-tenths per cent. the solution prevented the multiplication of the same micrococcus. This, however, is not superior to the value established for sodium biborate alone. We find, by reference to Table IV., that the solution of salicylic acid and sodium biborate prevented the development of *B. termo* in the proportion of 0.12 per cent. The antiseptic value is, therefore, about the same as that of carbolic acid; and in selecting one or the other of these agents as an antiseptic for external use, we may be governed by other properties which seem advantageous—such as solubility, non-irritant action, etc.

Salicylic acid has been strongly recommended by Dr. Keating, of Philadelphia, in the acid diarrhœas of children. In this case there can be little doubt that the benefit derived from its use is to be ascribed to its power of

destroying or restraining the vital activity of the living ferment, to which the acid fermentation in the intestine is due.

*Alcohol*.—The value of alcohol as a germicide is so slight that its favourable action in supposed germ diseases requires some other explanation than that which assumes that it may destroy parasitic micro-organisms in the circulation. The amount of 95 per cent. alcohol required to destroy the septic micrococcus in twenty pounds of blood, would be something like four or five pounds, and to restrict the multiplication of the same organism, from one to two pounds should be constantly present in the circulating fluid; for this micrococcus multiplies freely in a culture-fluid containing five per cent. of alcohol.

It is of course quite possible that other pathogenic organisms are more susceptible to the influence of this, and of other reagents, than are the test-organisms which have been selected for these experiments. This is, indeed, rendered probable by the very marked difference shown in the vital resistance of *Bacterium termo*, and of the septic micrococcus to the reagent in question.

The first-named organism in a fresh culture was not killed by immersion in 95 per cent. alcohol for two hours. And the vitality of the same organism in "broken-down" beef-tea, old stock, containing reproductive spores, was preserved after forty-eight hours' immersion in 95 per cent. alcohol, while the septic micrococcus was not able to resist the same reagent in the proportion of 24 per cent.

*Sodium Hyposulphite*.—Our experiments show that neither the sulphite nor the hyposulphite of soda possesses any germicide value. And the last-named salts failed to prevent the multiplication of the micrococcus of pus when present in a culture-fluid in the proportion of eight per cent. But sulphurous acid is undoubtedly a potent germicide, and if this acid is set free by the decomposition of the sulphites when these salts are administered internally, we can readily understand that they may have a decided therapeutic value as germicides and antiseptics, notwithstanding the negative results obtained in laboratory experiments with a *neutral* culture-medium. The results thus far reported from the medicinal use of these salts have not, however, justified the sanguine expectations of Dr. Polli, of Milan, who first brought them into notice, and it may, perhaps, be safely said that their negative value as shown by our culture experiments is in accord with clinical experience.

*Ferric Sulphate and Zinc Sulphate*.—A saturated solution of ferric sulphate does not kill any of our test organisms, and the use of this reagent as a *disinfectant* would evidently be a serious error. It has, however, a decided value as an *antiseptic* agent, being effectual in the proportion of five-tenths per cent. The extended use, therefore, which sanitarians make of a solution of sulphate of iron, with *sulphuric acid*, in the treatment of foul privy vaults, etc., is justified by exact experiments. But it must be

remembered that the iron salt in this solution does not play the part of a germ destroyer, and if the object is to *disinfect* material supposed to contain the germs of diphtheria, of typhoid fever, of cholera, etc., a sufficient quantity of sulphuric acid must be present in the disinfecting solution to insure the accomplishment of the desired result. Sulphate of zinc in the proportion of 20 per cent. also failed to give evidence of any germicide power. The chloride of zinc was effectual in the proportion of 2 per cent., but the standard solution supplied as a disinfectant, liquor zinci chloridi (Squibb's) failed in the proportion of 8 per cent.

Our experiments, therefore, show that these salts, while they possess considerable antiseptic power, are entirely unreliable as disinfectants.

The *modus operandi* of the antiseptic action of ferric sulphate and of the other salts named seems to depend upon the power to coagulate and render insoluble the albuminous ingredients of a culture-medium and thus to prevent the development of septic organisms by depriving them of the pabulum required for their growth.

In the proportion in which these agents have been found to restrict the development of our test organisms, they have invariably caused a precipitation of the organic material in the culture-fluid—*rabbit-bouillon*.

The same effect is produced by tincture ferri chloridi, which is consequently an antiseptic agent of value. But this preparation has also the germicide power of the free hydrochloric acid which it contains, and the benefit derived from its local use in diphtheria and in erysipelas may be accounted for in this way. In the proportion of 4 per cent. it destroyed both the septic micrococcus and the micrococcus of pus.

The fact that exposure to the action of a 20 per cent. solution of zinc sulphate for two hours, failed to destroy the vitality of the micrococcus of pus, shows conclusively that the therapeutic value of this salt, in dilute solution, in gonorrhœa, ophthalmia, etc., is not due to germicide power. This is in accord with the results obtained by the writer in a recent series of experiments which show that the virulence of gonorrhœal pus is not due to the presence of the micrococcus found in it. (*Medical News*, Jan. 20 and 27, 1883.)

*Boracic Acid and Sodium Biborate.*—These reagents were equally inefficient as germ destroyers, but both possess considerable antiseptic power. They are especially efficient in restricting the multiplication of the putrefactive organism *B. termo*.

As the micrococcus of pus is less susceptible to their influence (see Table IV.), we can understand how this organism is sometimes found in pus from wounds treated antiseptically with boracic acid while no evidence of putrefaction is perceived. The therapeutic value of a weak solution of sodium biborate as an injection into the bladder in chronic cystitis attended with alkaline, or putrid, decomposition of the urine is also explained by the power of this reagent to restrict the development of



the organisms which are the cause of alkaline and putrefactive decomposition.

COMPARISON OF RESULTS WITH THOSE OBTAINED IN A FORMER SERIES OF EXPERIMENTS BY A DIFFERENT METHOD.—In the summer of 1881, the writer made a series of experiments in the biological laboratory of Johns Hopkins University, Baltimore, Md., to determine the comparative value of various disinfectants (*vide* Bulletin Nat. Board of Health, July 23, 1881; also "Studies from Biological Laboratory," vol. ii. No. 2, pp. 201-212).

As the same reagents have been tested by a different method in the two series of experiments, it will be profitable to compare the results obtained, which we do in the following table.

In the Baltimore experiments, the test organism was the septic micrococcus *in the blood of a rabbit* just dead from septicæmia due to its presence. This blood was found to produce fatal septicæmia in other rabbits when injected subcutaneously in the smallest quantity. The test of disinfection—germicide power—was the failure of septic blood to kill rabbits after treatment with the disinfecting agent. The time of exposure to the action of the disinfectant was half an hour (in present series of experiments two hours).

Arranging our experiments upon the septic micrococcus in a culture-fluid (Table III.) in one column, and those upon the same organism in the blood of a septicæmic rabbit in another, we find that the results obtained in the two series of experiments correspond very closely. This correspondence serves to prove the reliability of these results in each series by the other. And also to substantiate the deduction made as the result of other experiments (*vide* papers referred to on page 328) with reference to the pathogenic properties of the micrococcus in question.

For, evidently, the virulence of the septic blood depends upon the vitality of the micrococcus contained in it, and *disinfection, destruction of virulence, and destruction of the vitality of the micrococcus*, are synonymous terms.

It will be remembered that in the second column the full-faced figures represent the death of a rabbit from septicæmia after injection with septic blood exposed for half an hour to the action of the disinfectant named, in the proportion indicated by the figures. The plain figure indicates that the disinfecting agent destroyed the virulence of the septic fluid, and that the test-rabbit survived the injection.

TABLE VI.

Reagents.	Recent experiments, septic micrococcus.	Balt. experiments, septic blood.
Iodine . . . . .	0.2, 0.1, 0.05	0.25, 0.2, 0.1
Sulphuric acid . . . . .	0.25, 0.12, 0.06	1.25, 0.5, 0.25
Carbolic acid . . . . .	0.5, 0.25	1.25, 0.5
Caustic potash . . . . .	4. 2, 2, 1	2.5, 1, 0.5
Alcohol . . . . .	24, 12	25, 12

When the difference in time of exposure to the action of the disinfecting agent, in the two series of experiments, is considered, it will be conceded that the correspondence is sufficiently close to justify the claim that there is "cross-proof" of the approximate accuracy of the results obtained in each.

We have excluded from this list all reagents except those which have absolute germicide power; for it is evident that the comparison cannot be fairly made in the case of antiseptics, such as ferric sulphate and boracic acid, which restrict the multiplication without destroying the vitality of our test-organisms.

*Conclusions.*—The vital resistance of bacterial organisms to chemical reagents differs, within certain limits, for different species. And certain species show special susceptibility to the germicide action of particular reagents, *e. g.*, the sceptic micrococcus to alcohol and *B. termo* to boracic acid.

There is, therefore, reason for supposing that different pathogenic organisms may differ, in like manner, as to susceptibility to the action of various agents administered medicinally with a view to their destruction. Nevertheless, the *comparative* germicide value of the reagents tested is the same for the several test-organisms, and, allowing certain limits for specific peculiarities, it is safe to generalize from the experimental data obtained in the practical use of these reagents as disinfectants. But it must be remembered that the resisting power of reproductive spores is far greater than that of bacterial organisms in active growth (multiplication by fission) and the data obtained for the latter cannot be extended to include the former.

The *antiseptic* value of the reagents tested depends upon their power to prevent the multiplication of putrefactive bacteria, and this is not necessarily connected with germicide potency. For some reagents which fail to kill these micro-organisms are, nevertheless, valuable antiseptics, *e. g.*, ferric sulphate and boracic acid.

Clinical experience has demonstrated the value of all the potent germicide reagents tested, in one or more of the diseases which there is the most reason to believe are due to the presence of pathogenic micro-organisms in the *primæ viæ*, in the blood, or in the tissues, *e. g.*, intermittent fever, typhoid fever, dysentery, erysipelas, syphilis, etc. The "germ theory" as to the causation of these diseases, receives, therefore, very strong support from modern therapeutics. But our experiments do not justify the belief that any one of the reagents tested can be administered as a *specific* in germ diseases generally. This also accords with the results of clinical experience, and makes it possible to believe that the specific, self-limited diseases are also "germ" diseases.

For if any germicide agent could be administered in sufficient quantity to insure the destruction of all parasitic organisms within the living body, it would evidently be a *specific* for all diseases of this character and its failure to arrest the progress of any one of these *hypothetical* germ diseases would be very good evidence of the unsoundness of the hypothesis.

## ARTICLE II.

ON THE IMPORTANCE OF THE THOROUGH DISINFECTION OF THE STOOLS IN ENTERIC FEVER. By JAMES C. WILSON, M.D., Physician to the Hospital of the Jefferson Medical College, in Philadelphia.

THE importance of the thorough disinfection of the stools in enteric fever is, to those who believe in it at all, so great and its practical results in the control of the extension of the disease are so manifest and direct, that it will doubtless appear to such persons a superfluous labour to discuss the matter anew. I do not hesitate, however, to incur the criticism of needless writing upon a subject so familiar to many medical men actively engaged in the daily practice of their profession, for the reason that I observe that there are quite as many others to whom the subject appears to have no importance whatever. These latter, either do not believe in the necessity of the disinfection of enteric fever stools, or else they regard it as of so slight moment that it matters not practically whether it be attended to or not, or finally whilst professing to recognize its importance they adopt in practice imperfect, or incomplete, measures to accomplish it. I believe it to be the exception to the rule, rather than the rule, both in private practice and in hospitals, to systematically and thoroughly disinfect every stool, even in well-characterized cases of enteric fever. The cases in which, upon inquiry, I have found such a rule carried into effect, have been conspicuously few. Even those practitioners who fully realize the dangers attendant upon its neglect are not rarely prevented by circumstances from accomplishing all that they consider necessary. This may happen, for example, in imperfectly developed or atypical cases that are not easily recognized until well advanced, or in cases of true relapse not recognized because of the imperfect account of the primary sickness given by the patient or his friend; or, and this often occurs, by reason of the neglect of the attendants, who are slow to understand the danger of treating the stools in this disease with indifference, especially when they cherish the opinion that they, because they have nursed many cases of fever, know a good deal about it.

Liebermeister has well said that "prophylactic measures will be effective just in proportion to the strength of our belief in the material nature of the typhoid poison, and in the possibility of destroying it, or preventing its spread." And he adds that, "here, as elsewhere in therapeutics, half-way measures, such as are likely to be employed by those who have but little faith in their efficacy, yield not half-way results, but no results at all." For my own part, after some observation and much careful consideration of the matter, I confidently believe that it is not only possible to greatly restrict enteric fever in its prevalence, but that, as has been suggested by Flint, it is also possible in the course of time to get rid of it

altogether. This statement is made with a full knowledge of the fact that this disease has a more extensive geographical distribution than any other zymotic disease whatever, and that it is not only at the present time endemic in almost every quarter of the globe, but that it is also the most common of the endemic infectious diseases in the countries where it prevails.

A growing knowledge of the habits of the exciting cause of enteric fever and of the methods by which the disease is propagated warrants this belief. It is certainly not more chimerical than would have been such a hope in the beginning of the seventeenth century, in regard to the plague; yet in little more than a century that disease had disappeared from Western Europe; nor than such a belief concerning smallpox in 1717, when Lady Wortley Montagu caused her son to be inoculated; yet to-day smallpox exists in civilized countries only by the neglect of the known means of its control. Could the surgeons of the Napoleonic campaigns have dared to predict that the greatest armies of modern history, both in Europe and America, would almost wholly escape the ravages of typhus? What an unsparing quarantine did with the plague in Europe; what vaccination has accomplished in the control of smallpox; what efficient sanitary regulations have brought to pass in preventing typhus fever in great armies—an energetic prophylaxis will assuredly accomplish with the great fever of the present.

Such a prophylaxis is in theory within reach; its practical realization depends upon the energy and steadfastness with which measures for the destruction of the true cause of the disease and the prevention of the spread of that cause are carried out. These measures are to be directly deduced from a consideration of knowledge concerning the causation of enteric fever, now so familiar as to be embraced by the term “popular.” They belong to the general subject of public hygiene, and are of sufficient importance to demand the unremitting attention of all local and general sanitary organizations; for enteric fever destroys more lives that could be saved than any other acute disease whatever. They are, moreover, largely within the personal control of the physicians of every community. It is a duty of the doctor, too often overlooked, to see to it, that no preventable new case of disease arise by direct or indirect contagion from any patient under his care. In enteric fever, we have to do with a disease in which this is wholly possible. Our efforts to prevent further cases arising from the original source of infection may be often in vain, but the spread of the disease from any given patient is always, and absolutely, within our control. The cause of the disease cannot only be definitely and wholly destroyed, but this can be accomplished with certainty before it has acquired the power of infection.

The one efficient measure that includes all others, is the proper treatment of the dejections.

Up to the present time the exciting cause of enteric fever has eluded

the attempts that have been made to demonstrate its nature. It is surely a micro-organism. Upon no other hypothesis can the known facts of the history of this and most of the other infectious diseases be explained. There is, moreover, abundant warrant for such a conclusion in the analogy of certain other diseases, notably anthrax and relapsing or spirillum fever. As it is, we are apparently upon the eve of more definite knowledge than has yet been attained. In 1880 was made the now familiar announcement of Eberth and Klebs, that they had discovered organisms in the tissues and fluids of patients dead of typhoid, that were not met with in like situations nor under like circumstances in the bodies of persons dead of other diseases. The researches of these observers were carried on separately and the announcement of the discovery of the organisms in question was made by each independently of the other, and nearly at the same time. There was a close correspondence in the descriptions, and each regarded the organisms described as essentially related to the cause of the disease.

A few months ago Maragliano, of Genoa, published an important note on the uniform occurrence of organisms in the blood of enteric fever patients during life. He found them both in the blood of the general circulation, and in that of the spleen, the latter being obtained by means of a hypodermic syringe the needle of which was passed through the abdominal wall into the substance of the organ. In the developed disease there are present in the blood isolated and grouped spherical bodies of a delicate contour, apparently homogeneous, resembling micrococci. Similar bodies were also found in the blood from the spleen, together with delicately outlined rod-shaped bodies corresponding in all particulars with those described by Eberth and Klebs. These bodies diminished in numbers as convalescence progressed, and none or very few were discovered in the blood of patients after large doses of quinine. By the method of fractional culture these organisms were reproduced in large numbers. Maragliano expresses no opinion as to their relation to the disease.

These observations are very suggestive. They are nevertheless inconclusive. Although the organisms described may be cultivated, there is nothing to show that either the resulting product or the blood itself is capable of giving rise to the disease in suitable subjects, as has been shown to be the case by the experiments of Pasteur with anthrax and chicken cholera, and by those of H. Vandyke Carter, at Bombay, in producing relapsing fever in monkeys by inoculation.<sup>1</sup>

<sup>1</sup> Dr. Almqvist, of Stockholm, who has been working in this field, has cultivated bacteria taken from the blood of an enteric fever patient on the eleventh day, and succeeded in producing a series of generations. From the second generation he succeeded in inoculating a dog with the following result: the animal was hardly ill, but on the fifteenth day the Peyer's patches were found to be much swollen, and to contain bacteria, which were regarded as characteristic.—See *Med. Times and Gazette*, September 23, 1892.

It is also stated that M. Pasteur has succeeded in isolating the microbe of typhoid fever.—*Annales d'Hygiène publique*, September, 1882.

The difficulties in the way of the experimental investigation of this subject relate first to the almost complete absence of susceptibility to enteric fever on the part of the lower animals, and secondly, to the clinical fact that the stools do not possess at once upon being voided the power of infection, but only acquire it after undergoing certain altogether unknown changes outside the body.

Although the nature of the germ that gives rise to enteric fever is unknown, many facts in its natural history are established by abundant proof. Of these, the following have a direct bearing upon the subject of this paper:—

1. It is invariably derived from a previous case of enteric fever.
2. It is eliminated with the fecal discharges.
3. It is not capable of producing enteric fever at once in susceptible persons exposed to it, but must undergo changes outside the body before it acquires this power.
4. It retains its activity in favourable situations for a lengthened period, the requirements to this end being decomposing animal matter, especially fecal discharges, and moisture.
5. In such situations it is capable of reproducing itself.

These are the facts which indicate with singular directness the true measures necessary to prevent the spread of the disease, the efficient prophylaxis. These measures belong, for the most part, as I have said, to popular knowledge, and are beginning to be widely understood. That they fail of general acceptance is to be explained by two things: First, incredible as it is in the face of the accumulated knowledge upon the subject, there are still many persons regarded as professionally qualified to speak with authority upon such matters; and what is more, regarding themselves as qualified to do so, who look upon the germ theory of the infectious diseases as purely hypothetical, and who hold firmly to the view that typhoid fever, which they are inclined to consider a sort of, “low nervous fever,” may be caused by fear, sorrow, care, great fatigue, and so on, and therefore regard all measures of prophylaxis based upon the germ theory as a working hypothesis as vain.

Second, the pythogenic theory of the origin of enteric fever, introduced by Murchison and ingeniously defended by him and his followers, still holds its sway in the minds of many practitioners and teachers. The arguments in favour of this view and those against it are too familiar to detain us here. To Dr. William Budd, of Bristol, is due the credit of having first clearly pointed out and conclusively established the fact that no amount of filth of any kind can give rise to enteric fever in the absence of a previous case, or the dejections or soiled linen of a previous case. To turn back to his papers, in the light of our present definite knowledge of the specific cause of certain fevers, and especially with our present knowledge of the cause of relapsing fever, and read them as they appeared in *The Lancet*,

at intervals between 1856 and 1860, has a curious effect upon the mind of the student of medical history. With all the work done since they appeared but little has been added to the sum of his information upon the subject of the propagation of the disease. It was he who spoke of the sewer as "a continuation of the diseased intestine." He abounds in strong expressions, happy illustrations and an impressive earnestness. That it has occasionally been impossible to trace the mode of conveyance of the "typhoid poison" in instances of the disease that have occurred in communities previously free from it, constitutes a very feeble argument against the view of the continuous propagation of the disease. It is easy to conceive of the unsuspected transportation of colonies of micro-organisms in many ways; not difficult to understand the occurrence of cases of enteric fever that cannot be traced, if the germs which occasion it are capable of a prolonged existence outside the body, and of this there is abundant and conclusive proof.

One thing Budd did not understand. He failed to recognize the fact that the stools are not infectious when voided, but must undergo changes which require a certain, though not very long, time before they are capable of giving rise to new cases. The failure to understand this has proved a stumbling-block alike to those who have regarded enteric fever as contagious, and those who have held to the opposite view. Both views are true. It is not directly but indirectly contagious. Cases are now and then observed which are at first sight apparently due to direct contagion, but which upon closer consideration are found to have been caused by the transmission of the diseases by indirect means.

Dr. Cayley, in his Croonian Lectures for 1880, relates the particulars of such a case:—

"A boy was admitted into the Middlesex Hospital on March 27th, suffering from a very severe attack of typhoid. For several days he lay in an unconscious condition, and during this time he had very profuse diarrhoea—twelve to twenty liquid motions daily, which were for the most part passed in bed.

"In the next bed was a boy, aged six, who had been admitted on April 16th, with acute renal dropsy and bloody urine. He was kept strictly confined to bed, and never got up to go to the water-closet, down which the motions of the typhoid were thrown.

"On May 11th, when he was convalescing, the dropsy having disappeared, and the albumen much diminished, he was seized by typhoid fever, and passed through a moderately severe attack, with a small-marked rash and characteristic symptoms."

I have encountered a similar case: A man aged 20, was admitted to the hospital of the Jefferson Medical College, 28th October, 1881, with symptoms of subacute rheumatism, affecting several joints, and most severely the knees. A few days after admission, it was discovered that he was suffering from a purulent urethral discharge. The joint-pains which improved at first, afterwards proved stubborn; an iritis developed; there was complete loss of appetite, and great mental depression. In consequence of pain and inability to take food the patient fell into a state of great debility. He was, however, free from fever. When he had been

in the ward more than four weeks the temperature rose and diarrhœa set in. In the course of a few days he became delirious, and some rose-coloured spots appeared. Death occurred six weeks after the patient's admission, and the necropsy disclosed characteristic typhoid infiltration of Peyer's patches, and the solitary glands with beginning ulceration.

In the next bed but one to that occupied by this patient, was a man suffering from relapse of enteric fever, whose illness had been greatly prolonged, and who, during the greater part of the time from the admission of the patient spoken of till his death, had copious diarrhœa and was only feebly conscious, so that despite the vigilance of the attendants, his bed and his person were frequently soiled with the discharges.

Cases of this kind are, however, rare. The attendants who wait upon the sick, and even remove and empty the vessels, the medical men, who are occasionally obliged to inspect the stools, and the patients in adjoining beds, who are of necessity exposed to the effluvium from the recent stools, as a rule, to which there are few exceptions, escape infection. When such exceptions occur, it is usually possible to trace the infection, as in the above cases, to exposure to the emanations from discharges that, soiling the linen, or soaking into the mattresses or otherwise retained, have undergone the changes of decomposition outside the body of the patients. Under ordinary circumstances the new cases that occur upon the importation of the disease into hospitals are not apt to arise among those persons immediately surrounding the patients; but rather if there be defects in the drainage, among others at a distance. The changes by which the dejections acquire this power of infection take place with greatest activity in drains, privies, and upon ground saturated with organic substances where the dejections are collected together.

We encounter at this point a question of the greatest practical importance. It is this: Within what time do the stools, innocuous when voided, develop their infecting properties? Definite facts upon which a positive reply to this question could be based are wanting. The time is, however, in all probability brief. Dr. Cayley states that in the Middlesex Hospital, it was formerly the custom to keep the stools of cases of enteric fever, which the physicians wished to inspect, in pans which were kept in the water-closets of the wards. The time during which these stools were kept rarely exceeded twelve hours; nevertheless several instances occurred in which the patients using these closets contracted the disease. If these reserved stools were the cause of the infection, the period within which the contagious properties became developed in them could not have been longer than twelve hours.

That the soiled linen, which when fresh may be handled by the attendants with impunity, speedily becomes capable of occasioning the disease, is shown by the frequency with which washerwomen suffer, for articles of this kind are usually sent to be washed without great loss of time. This manner of infection is attested by many unquestionable observations. That related by Dr. Cayley is very striking. It took place at Calne:—



"A laundress occupied the middle one of a row of three houses supplied by one well, into which the slop of the laundress's house leaked. She on one occasion received the linen soiled by the discharges of a case of typhoid fever, and after fourteen days cases occurred in all three houses."

Dr. Budd's argument for the contagious character of enteric fever would have been unassailable if he had understood that the "special condition" of the communicability of the disease is the lapse of a few hours. At one point he says:—

"To teach . . . that the disease is not contagious, because the immediate attendants on the sick escape it, . . . is much the same as to argue that because the next successors of the tuft of rushes that overhangs yonder river do not spring up immediately around their parent, the spores it has committed to the stream are sterile, and that it is not in the nature of rushes to multiply at all."

If the spores, instead of floating away to distant points, remain where they fall long enough to germinate, the next successors will be close at hand. The element of time is now known to be the "special condition." It is, therefore, impossible to overrate the importance of prompt measures to render the stools inert through disinfection by the use of "powerful chemical agents," and their removal to localities in which they are little likely to do harm. This is no new suggestion.

The following plan was suggested by Dr. Budd, who, from the time he adopted this method of prevention (till the publication of the paper referred to) met with only one instance, where it was used from the first, in which the disease spread beyond the individual first attacked, while before he adopted it, it was not an uncommon thing for him to see several members of a family take the disease, one after another, even in airy and well-appointed houses:—

1. "That for the future all the discharges from the fever patient should be received on their issue from the body into vessels containing a concentrated solution of chloride of zinc.

2. "That all tainted bed or body-linen should, immediately on its removal, be placed in water strongly impregnated with the same agent.

3. "That the water-closets should be flooded several times a day with it, and that some chloride of lime should also be placed there, to serve as a source of chlorine in the gaseous form.

"And, lastly, and by way of further precaution, that so long as the fever lasted, the water-closets should be used exclusively as a receptacle for the discharges from the sick."

Liebermeister uses a porcelain bedpan, the bottom of which is strewn with sulphate of iron each time before being used. Immediately after the passage, crude muriatic acid is poured over the fecal mass in considerable quantities—as much as one-third to one-half of the amount of the discharges being used. He also advises that, when practicable, the contents of the bedpan should be emptied into trenches dug anew at short periods.

and carefully filled up; care being taken that they are located at a distance from the source of water supply.<sup>1</sup>

Except in rural districts this is of course impossible, and the dejections must be emptied into the ordinary water-closets or privy-vaults.

Flint directs that carbolic acid in the proportion of one part to forty of water should be at once used for the purpose of disinfecting the stools. If the odour from this disinfective agent be objectionable, a concentrated solution of sulphate of iron may be substituted, of which half a pint may be poured upon each dejection, or a mixture of these two substances may be used.<sup>2</sup>

Bartholow says: "The dejections of a typhoid patient should be at once disinfected by a strong solution of sulphate of iron or chloride of zinc."<sup>3</sup> It has also been suggested that the stools be mixed with sawdust and burned.

Like rules are laid down in most of the modern text-books, with more or less emphasis, according to the strength of the belief of the respective authors "in the material nature of the typhoid poison, and the practicability of destroying it or preventing its spread."

From the time that enteric fever first assumed place as a substantive disease, differing pathologically and clinically from the others of the group of continuous fevers, two opinions were held, both in Great Britain and on the continent, concerning its contagiousness. It is worthy of note that the physicians of large cities, centres of medical authority, for the most part denied that the disease was communicable from the sick to the well; whilst those practising in the rural districts maintained its contagiousness, and from time to time published narratives of local outbreaks not otherwise explicable. Bretonneau, Chomel, Louis, all, however, inclined to the opinion that the disease was communicable. Trousseau, after citing a series of instances, declares that "the contagious nature of the disease is incontestable," and suggests, as an explanation of the fact that patients rarely contract the disease in hospital wards from others who have it, that the individuals who thus escape may have been rendered insusceptible by an attack at a former time. He adds the more general explanation that the energy of the *contagium* is less when cases occur sporadically than when typhoid fever prevails as an epidemic. These explanations are wholly inadequate, and have been set at naught by the facts brought to light by Budd.

Those who, prior to the time of the last-named observer, advocated the contagiousness of the disease, could suggest no measures of prophylaxis other than those employed to prevent the spread of the other contagious diseases, such as isolation, fumigation of the apartment, clothing, and so on. Measures such as these were seen to be wholly unnecessary when,

<sup>1</sup> Ziemssen's Cyclopædia of Medicine.

<sup>2</sup> Clinical Medicine.

<sup>3</sup> Practice of Medicine.

by happy accident, the stools were well and quickly gotten rid of, and wholly useless when, by an unfortunate mischance, as often befell, especially in country places, the stools were treated with indifference. Thus it came to pass that a deplorable and dangerous uncertainty prevailed as to whether or not the disease was communicable. This uncertainty is now for the most part settled, though it would appear that a fear lest enteric fever may be directly contagious still exists in the minds of the Hygienic Council of the French Academy of Medicine, who have recently drawn up the following rules, to be observed "when the presence of typhoid fever is recognized":—

"1. *Isolation*.—The patient should be isolated as far as possible from the other inhabitants of the house; if complete isolation be not possible, the patient should be taken to a hospital. If the patient remain in his home, only those persons who minister to his wants should have access to his chamber, while all children should be rigidly excluded. Nurses should wash in carbolized water, one per cent.

"2. *Aeration of the Chamber*.—A room should be selected which can be readily aired. The hangings, curtains, and carpets should be removed, and the bed placed in the centre of the room.

"3. *Disinfection of the Evacuations*.—All the ejeeta of the patient, before being thrown out, should be thoroughly disinfected with a solution of chloride of zinc, 20 per cent. The privies into which the evacuations are thrown should also be flushed with this solution.

"4. *Disinfection of Clothing*.—All the patient's body- and bed-clothing, before being removed from the room, should be plunged into a solution of carbolic acid, 5 per cent., and then immediately washed.

"5. *Disinfection of the Room*.—After the death or cure of the patient, charcoal should be burnt in the room, with sublimed sulphur, and the chamber should then be closed for twenty-four hours. The chamber should then be washed with carbolized water, and not reoccupied until it has been freely aired for at least a week."

If enteric fever be not directly but only indirectly communicable, and that by means of the dejections, several of these rules are unnecessary. It is with the stools, the vessels into which they are voided, the body-linen and bed-linen soiled with the discharges, and these alone, that we must concern ourselves in the matter of disinfection to prevent the spread of the disease. Plenty of fresh air, as little furniture as possible, no visitors or others in the room except those who take care of the patient, scrupulous cleanliness in all respects, are points to be insisted upon in the management of every case; but we must not lose sight of the real danger, nor by too great diligence in matters not essential, suffer our attention to be diverted from the one needful thing.

Every-day experience, both in hospital and general practice, shows how slight is the danger of the communication of the disease where the discharges are properly disposed of. This, and not, as Trousseau supposed, the greater energy of the cause, is the explanation of the comparative rarity of local epidemics in cities, their frequency in small villages and rural districts. In cities the discharges are, as a rule, promptly thrown into drains and more or less completely swept away; in

the country they are apt to be deposited near the dwelling, and not only are they thus kept, but they are too often kept under circumstances the most favourable to the development of their infecting principles.

The literature of the subject abounds with lamentable illustrations of the dangers of the neglect to *completely disinfect* the stools when cases occur in the country, or under circumstances where it is impossible, through the lack of drainage, to effectually remove the dejections to a distance. But what is happening every day in cities in consequence of the neglect of disinfection? Is it enough that no new cases arise in the immediate vicinity of the patient? The drainage of our house is perfect, and by good fortune no particle of the treacherous filth is anywhere retained. Are we therefore to be unmindful of our neighbour, whose house-drains are far less safe than ours, imperfectly or perhaps not at all trapped and ventilated? Or of the dangers of the sewer inlets, or at some distant leak, where the sewage, soaking into the surrounding soil, may befoul a source of water supply, or where it only awaits the disturbances necessary for alterations or repairs to occasion fresh cases? Or, lastly, dare we ignore the fact that the crews of ships, lying in the rivers and harbours into which our great systems of sewers empty, contribute a steady supply of enteric fever cases of the most severe type to our hospitals? It occasionally happens, perhaps more frequently than we suspect, that the best house-drainage attainable fails of its object in some particular. Somewhere about the closet, in some joint or crevice, perhaps at the junction of the wood-work and the porcelain, an unobserved fleck of feces—the merest splash from the emptied bedpan—lodges and stays, retaining indefinitely or even affording a nidus for the development of its disease-producing microbes. In this way, when not in more obvious and coarser ways, such as choked soil-pipes, or leaks, or bad traps, or the dangerous old-fashioned pan closet, certain houses, a case once having occurred in them, become in a literal sense homes of enteric fever. There are typhoid houses, just as there are diphtheria houses, and for the same reasons.

Examples of such perennial centres of infection are far from rare. Murchison, among others, speaks of houses of this kind. I have recently met with several cases apparently due to continuous house-infection. I anticipate the objection that individuals dwelling in the same house may contract enteric fever at indefinite intervals as a mere coincidence, the infection being not continuous, but derived from altogether different sources. The *probability* of continuous house-infection is sufficiently strong for the purposes of the argument.

In a family of eight children, living in a large, well-built house, a son had enteric fever, and occupied, during his sickness and afterward, a room communicating with a bath-room in which there was also a water-closet. Enteric fever had not previously occurred in the family nor in the house. A year after his recovery the son gave up the room to a sister, who shortly afterwards contracted the disease. Thereupon the drainage of the

bath-room was overhauled, "found defective," and rearranged. Nevertheless another daughter, who after several months came to share the room in question with the sister who had been ill, after repeated attacks of diarrhœa, had severe enteric fever.

Here the bath-room communicated directly with the sleeping-room; but in the two cases that follow an arrangement of the water-closet commonly looked upon as affording unusual security existed. At this point it may be stated that with properly trapped and ventilated soil-pipes, and a good supply of water the dangers from the sewer as to enteric fever are slight. It is from the house-side of the trap and the adjacent construction that, a case once having occurred, danger is to be feared.

A gentleman occupied a large airy room on the third floor of a spacious corner house in the heart of the city. In the autumn of 1881, he fell ill of enteric fever. The stools were thrown into a water-closet in the bath-room on the same floor. This bath-room does not communicate with any of the sleeping rooms, but being built in a sort of annex, is reached by a short hallway. The water-supply is good and the plumbing modern and in order. This year another gentleman, not having been exposed to any other traceable infection, and spending the most of his time in this house, using also this bath-room, has suffered, as I learn from his medical attendant, from an anomalous continued fever of considerable severity and long duration.

And another, yet more striking case:—

A gentleman of means, 38 years old, bought one of a row of houses in the course of building in a good neighbourhood. Desirous of securing the best drainage, he made such arrangements with the contractor in charge of the work as permitted him to take personal charge of the plumber's work in his house. Neither trouble nor expense was spared in the pursuit of this object. The details of the work were in accordance with the suggestions of an expert of repute. The bath-room communicating with his sleeping-room was provided with a tub and stationary washbasin only, the water-closet being in the back buildings and connected with the sewer by a separate system of pipes. A few months after moving into this house, its owner contracted enteric fever, of which he died in consequence of perforation of the bowel. Eighteen months later his widow, who had continued to occupy the house, suffered from an attack of enteric fever with characteristic symptoms.

Much more disastrous was the next instance:—

A family, consisting of a man and his wife, one daughter and several sons, all grown up, came to eastern Pennsylvania and bought an extensive tract of unimproved land upon the southern slope of a mountain of moderate elevation. Upon a portion of this land they built a large frame house as a general boarding-house and water-cure establishment. The nearest dwellings were a mile away, and the water supply, which was abundant for all purposes, was drawn from a spring some distance above the house on the hillside. The plumbing was arranged with judgment, and the surroundings were salubrious. The second year there came to the house in September, as a boarder, a lady, who, within a few days of her arrival, fell ill of enteric fever, of which she died. In the course of

a few weeks the daughter and one of the sons had fever, and were sick a long time. The following summer two or three cases of fever occurred among the boarders. This reappearance of the disease led the owner to have his plumbing and drains examined by a competent person, who found no stoppage and no leaks. Nevertheless, such changes were made as would obviate, it was thought, every possible risk of infection from this source in the future. The next summer, four persons of whom I have knowledge contracted fever after some weeks' sojourn in this house. One of these died, and another, who was taken sick a few days before his return to Philadelphia, was under my care for six weeks with distinctly marked, mild enteric fever.

Efforts to trace the history of families, and of houses in which enteric fever has occurred, have, in my own practice, brought to light the above facts in the course of a few months. I am confident that similar investigations in a wider field would disclose a much more general evidence of continuous house-infection than is commonly suspected to exist. The limited number of cases, and the length of the intervals at which they occur are to be explained by the smallness of the amount of the infecting principle, rendering necessary, in all probability, an exposure of peculiar directness, or by the fact that a certain proportion of those exposed have been rendered insusceptible by a previous attack; or, finally, it is in a high degree probable that prolonged, incomplete exposure to the infecting principle of enteric fever may bring about in the individual a certain degree of tolerance—a sort of acclimation to an atmosphere sparsely charged with that poison.

To state the subject concisely, when a case of enteric fever arises from any source of infection whatever, there is great danger that it in turn will become the source of an indefinite number of other cases, a new focus of infection. The disease being propagated by means of the alvine discharges, two sets of persons are endangered by any particular case, those in the immediate vicinity, and those at a distance. The relative danger of near and remote infection is in rural and urban communities reversed in consequence of the different customs prevailing in each as regards the usual disposition of fecal discharges. In rural districts persons near at hand are particularly exposed, hence the frequency of local epidemics, whilst by the chance contamination of sources of water-supply, springs, running streams, or the transportation of dung for use as manure, persons at a distance may also become exposed, though much less frequently. In cities, however, the discharges being conveyed away by means of underground sewers, subject more commonly those at a distance to the danger of infection. Nevertheless, we have seen that continuous house-infection may occur from the accidental retention of minute collections of the infecting principle on the house-side of the trap in the best attainable water-closets and sewer systems.

The importance of simple and effective sewerage, and of thoroughness

in every detail of house-drainage, is to be urged at all hands with unremitting earnestness. But with reference to enteric fever safety does not lie in this direction. The danger to those near by and to those remote may be reduced to a minimum without regard to the imperfections inherent to the best plumber's work, by the systematic and thorough disinfection of the stools. When all the stools are completely disinfected immediately upon being voided, the danger that any given case will give rise to new cases becomes nil. To accomplish all that is possible in preventing the spread of enteric fever, the plan of complete and immediate disinfection must be systematically applied not only to the stools of the established cases, but also to those of cases that are beginning, that is to say, not only to the recognized but also to the suspected cases. In this way, and only in this way, can enteric fever be "stamped out."

The method of disinfection and the agent employed are of the utmost importance. There is little doubt that many of the measures commonly employed for this purpose are altogether inoperative; the disinfecting (germicide) power of many of the agents in common use is certainly feeble.

Koch has experimentally tested the ordinary disinfectants with the object of ascertaining (1), their respective power of destroying the resting-spores of bacilli, which are the most difficult of all forms of life to destroy; (2) their influence upon more easily destructible organisms, yeast, bacteria, bacilli, and micrococci; (3) their relative power of arresting the development of micro-organisms in alimentary beverages.<sup>1</sup>

He found that carbolic acid did not prove itself a sovereign disinfectant. It is worthy of note that solutions of this agent in oil and in alcohol are without effect in destroying the spores and bacilli of splenic fever. The same was the case with salicylic acid and thymol. Sulphurous acid also proved a very uncertain disinfectant for practical purposes. Zinc chloride, even in 5 per cent. solution, failed within a month to weaken the developing power of splenic fever spores.

Koch concludes that the only certain disinfectants are chlorine, bromine, and corrosive sublimate.

The results of these elaborate experiments may be found in the number of this Journal for October, 1882, page 581.

A series of experiments conducted by Arloing, Cornevin, and Thomas, at Lyons, with the object of testing the influence of various disinfecting agents upon morbid germs, resulted in placing corrosive sublimate at the head of the list of the efficient agents. The infecting principle of symptomatic anthrax was used, and a solution of 1 to 5000 was found to be capable of destroying the germs in the dried state.<sup>2</sup>

These results are in accordance with well-known facts—facts apparently

<sup>1</sup> *Mittheil. der Kaiser Gesundh.* 1881, Bd. X. Report der Analyt. Chemie, 1882, No. 1.

<sup>2</sup> Lyons Médicale. See also Abstract in *Am. Journal Medical Sciences*, October, 1882, p. 582.

better known, however, in the arts than in medicine. For example, solutions of corrosive sublimate are constantly used in households to destroy vermin, and it is well known that such solutions are employed by the taxidermists and furriers for the preservation of skins. Less known, perhaps, is their use by carriage-builders and hatters to prevent the development of moths in woollen fabrics. Corrosive sublimate is, however, much employed in the treatment of certain of the parasitic skin affections. It possesses also, to a high degree, the property of retarding putrefaction. "Animal matters, immersed in its solution, shrink, acquire firmness, assume a white colour, and become imputrescible. On account of this property it is usefully employed for preserving anatomical preparations." (Wood and Bache.)

I have satisfied myself by repeated experiment, that even weak solutions of corrosive sublimate possess the power of deodorizing putrescent animal substances to a degree not shown by most other substances in common use for the purpose, and I have of late used a solution of this agent 1 to 15000 to 1 to 5000 in washing out the chest cavity in cases of empyema with the effect of rapidly reducing the amount of purulent discharge.

In this preparation of mercury we possess at a very moderate cost a disinfectant of the highest efficiency. It is free from colour and odour, and in every respect convenient of employment. It is, furthermore, not only sure, but also rapid in its action. On theoretical and practical grounds alike, it is the disinfectant to be preferred for use in preventing the spread of enteric fever.

In practice 8.00 grammes (3ij) of corrosive sublimate, taken to the house of the patient by the physician himself to avoid all risk of accidental poisoning, is to be dissolved in a gallon of water in a large bottle or demijohn. This vessel, properly labelled, is to be given in charge of the nurse. The strength of the solution is about 1 to 500 parts, and the danger of accidental poisoning is surely no greater than that attending a similar use of strong solutions of zinc chloride, carbolic acid, or any of the crude mineral acids.

Immediately after the bedpan has been used, a sufficient quantity of this solution should be poured over its fecal contents to cover them. This may be conveniently accomplished when the amount of the evacuation is small by inclining the pan so that its contents gravitate to the large end. If there be hard lumps, it is advisable to break them up in the solution. The pan should not be emptied for fifteen minutes. When using the water-closet the handle of the valve must be held up sufficiently long to thoroughly flush the trap, and a small quantity of the solution afterwards poured into the basin of the closet and allowed to remain. A small quantity is also to be kept in the bedpan in the intervals of its use.

The linen should be sprinkled with the solution before being sent to the



laundry, and portions stained with the discharges must be thoroughly wet with it, or even allowed to soak a short time. As an additional precaution, the clothing should be boiled for some hours, and subjected to thorough rinsing (in running water whenever practicable) before being handled by the washerwoman.

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### ARTICLE III.

CASES OF "MUSHROOM POISONING." By JAS. D. TRASK, M.D., of Astoria, New York.

DURING an absence from home, last autumn, two reports of cases of death from eating poisonous fungi having met my eye in the columns of a country paper, I determined to obtain all the particulars possible in connection with them.

The first occurred in the family of Mr. G. E. Everett, residing near Modena, Ulster Co., N. Y., the family consisting of the father, mother, grandmother, daughter of fifteen, and a son aged thirteen. On visiting Modena the following particulars were obtained from Dr. Parker, who attended the family, and also from the surviving members:—

On the morning of Saturday, Sept. 23d, the father had gathered an edible mushroom (*Agaricus campestris*) from the grass before the door, which had been cooked by the grandmother, and tasted with great relish by several of the family. As the grandmother professed to be able to distinguish the wholesome from the poisonous, the father and son determined to gather a mess for dinner. A basketful was brought home, of which a considerable portion had been found in the woods. They were culled over by the grandmother, and, in what proved to be her absolute want of experience, she is believed even to have rejected some that were undoubtedly edible. They were served at dinner; those who had eaten the *campestris* in the morning, declaring that these had a different taste from it, the flavour being earthy and uninviting. Condiments were added to improve the taste. Not over a quart of the fungi was cooked. The wife ate not more than a *teaspoonful* of the *liquid*, the boy ate, perhaps, two fungi. At their evening meal, what had been left at noon was re-served and tasted by the father and grandmother and boy, but they found them still uninviting. The boy complained of malaise at supper time, and soon after going to bed was seized with vomiting and purging. At midnight the grandmother was attacked in the same manner, and by 2 A. M. the entire number was suffering from urgent vomiting, diarrhoea, and cramps, no one being able to render assistance to the rest, nor to go for help. About 5 A. M. the boy succeeded in reaching a house a quarter of a mile distant, and the doctor was sent for.

On the doctor's arrival he found the vomiting and purging almost incessant, accompanied by excessive burning in the stomach, cramps of the arms, legs, and walls of the abdomen. Nausea continued with the grandmother until Monday evening, a short time before her death, which occurred at 8 P. M.

There was with her, from the first, a tendency to collapse and oppression of breathing, requiring free employment of alcoholic stimulants. The vomiting and purging of the father continued, at prolonged intervals, until Tuesday noon. He suffered from a sense of prostration, which seemed disproportionate to the other symptoms. At this time hiccough occurred, which continued, at intervals, until the last. After cessation of vomiting extreme irritability of the stomach continued, permitting him to take blandest nourishment only in small quantities.

There was at no time tenderness over the epigastrium, or any part of the abdomen, only a sense of soreness after hiccough. There seemed to be no local evidence of gastritis, or of enteritis, beyond dejections of a deep green, offensive and mucous character. There was constipation for four days previous to death, loss of contractility of the bladder, requiring relief. For four days previous to death the temperature gradually sank to 97; the pulse at no time exceeded 90, was generally 86. As strength failed dulness of the mental faculties came on, and, during the last twenty-four hours, he was comatose. He died Oct. 6th, and was 44 years old.

Though Mrs. E. had partaken of an extremely small quantity of the soup only, her symptoms were as urgent as those of any of the family. She had, moreover, tenderness of the epigastrium, and scalding, acrid eructations, which were much relieved by the use of bismuth and soda. Convalescence with her commenced on the third or fourth day; and the recovery of the son and daughter was equally satisfactory.

The second instance occurred in the family of Mr. George Thorne, a farmer, living not far from Lake Mahopac, Westchester Co., N. Y.

The following particulars were kindly furnished by Dr. Edson Card, Jr., whom I visited at his residence at Lake Mahopac:—

The family of Mr. Thorne had recently taken back into their employment a female servant, who had lived with them some five years before, and who had then been in the habit of gathering and cooking mushrooms for them. Mr. T., congratulating himself on her return on this account, urged her to prepare a mess for the table, as she had formerly done. They sat down at their noon meal to the anticipated repast, Saturday, Sept. 16th. The husband and wife ate of the mushrooms, as did a peddler who happened to be present at their table. The peddler left immediately after dinner, and was heard of, some days afterward, as having been very ill at a place where he stayed overnight.

Mr. Thorne and his wife were seized about midnight with vomiting and purging and cramps, which were not very urgent, in the calves of the legs. Mr. T. had been subject, annually, to attacks of cholera morbus, and the true nature of the case did not occur to them till the following day. Dr. Card was not called till Sunday, at 3 P. M.

The doctor remained an hour, and gave twelve grains of ipecac, which had the effect of quieting the stomach.

Monday morning, purging still going on, Mr. T. fell into a state of collapse, and was hurried into bed. By the use of stimulants and heat, reaction was induced. At 1 P. M. he was restless, and complained of a sense of heat, while the surface was cold, and he died at 6.30 P. M. There was at no time tenderness of the epigastrium or abdomen on pressure, no retention or suppression of urine. There was constant thirst. The pulse small and frequent, and, during the last twenty-four hours, the mind was wandering, with a degree of stupor.

Mrs. Thorne was taken about the same time with her husband with similar symptoms. She had no vomiting or purging after Monday; on the contrary, her bowels were confined; lassitude ensued, and she had a protracted convalescence, with much nervous prostration.

There appeared in a late Pennsylvania paper an account of cases of poisoning from this source in the family of Mr. George Zimmerman, Centre Square, Montgomery Co., Penn., and I am indebted to the courtesy of Dr. S. C. Seiple, of that place, for the following particulars:—

He was called to the Zimmerman family on the morning of the 20th of Sept., 1882, about 7 o'clock. Mr. and Mrs. Z. and two servants, Charles and Mary Upright, were suffering from the effects of eating mushrooms on the previous evening, about five o'clock.

Toward morning they were successively seized with nausea, vomiting, and pain in the stomach, followed by purging. He observed no traces of mushrooms in the matters that were vomited, or that passed the bowels.

William Baker, another servant, who had collected the fungi, and, being very fond of them, had eaten a large amount, was not affected until towards evening. He was taken with symptoms similar to the rest, but the gastro-intestinal irritation came on sooner than with the others, and he was the first to die. His death took place on the 14th, about 11 A. M. Charles Upright died on the 25th, about 4 P. M. In the two fatal cases, and that of the little girl, Mary, there were bloody dejections, with great tenesmus, and, in the two fatal cases, somnolence, stupor, intermittent pulse, tympanitis, violent pain in the stomach, cold extremities, and livid skin.

At the first visit large draughts of lukewarm water were given, which gave some relief; afterward compound spirits of ether, with milk and brandy, and after the first day the diarrhoea and pain were controlled by opium suppositories. There was a constant and irresistible desire for ice, which was allowed sparingly, as "water is believed to be contra-indicated in muscarine-poisoning." The severe gastro-intestinal irritation was treated by a desertspoonful of olive oil every two or three hours: this in two cases "seemed to act like a charm." The pulse from 90 to 100 gradually rose to 150; temperature was below normal all the way through, but no exact record was kept.

The influence upon the nervous system was shown in depression of spirits and general anxiety. Dr. Seiple is inclined to attribute this in part to the direct poisoning influence of the fungi, from the fact that the nervous symptoms appeared very early. This was especially true in the case of Mrs. Z. This lady had no bloody dejections, and the irritability of the stomach and bowels entirely disappeared by the end of the week, but there were great nervous prostration and restlessness, which lasted at least four weeks.

A sister of the Uprights writes that the mushrooms eaten filled a small milk-pan, and were made into soup. Those first seized had violent vomiting, and suffered the most severe pains about the head, and had a burning sensation in the stomach, with fever. Mrs. Z. began to complain Wednesday morning at three o'clock, Mr. Z. about four, Mary U. at five, and Charlie about six. Baker felt no disturbing symptoms until Wednesday about dinner time. During Wednesday the sufferers at times seemed so far recovered as to be able to arise, but were instantly compelled to seek their beds again. Mrs. Z. and Charley were considered the worst.

Baker was 17 years old and Charley 16; both were strong, hearty boys. Baker went to bed when first seized, but got up in the afternoon, went to the barn and helped to do some of the night work; went to bed again, and with the exception of short periods remained there till his death. His suffering from thirst was intense.

October 24, 1874, I was called to see a man aged 72, a Scotelham by birth, suffering from the effects of eating supposed mushrooms. He was a stone-cutter by trade, and was employed in the Central Park, like "Old Mortality," to touch up defaced stone-work. In crossing the park to his work in the mornings his attention was attracted to a group of fungi under a tree, and he resolved if they should still be there on his return homewards in the evening he would gather them.

Unfortunately for him they had not been disturbed, and he secured them, in number about half a dozen. They were cooked for his breakfast on the following morning; their taste being bitter, the old man ate but one or two, and the daughter ate one. In the evening he returned home sick, suffering from vomiting and diarrhœa, which had come on soon after breakfast. About the time of his return the daughter was seized with vomiting, and continued to suffer till Saturday the 27th; on this day the father died. The vomiting and diarrhœa had not with him lasted over forty-eight hours, and he died from exhaustion which seemed to me to be disproportionate to the discharges.

The marked similarity of the symptoms in these various cases is of itself suggestive of identity of origin. The indications of gastro-intestinal irritation first appeared after an interval of nine to twelve or thirteen hours, and in one instance that proved fatal, the boy Baker, eighteen or nineteen hours. Vaillant states that in cases of poisoning from *Amanita phalloides*, symptoms do not appear until from twelve to fifteen hours. In every case there were indications of the operation of a depressing influence upon the nervous system, disproportionate to the diarrhœa. From a very exact description given to me personally by Mrs. Everett, a very intelligent person, of the appearance of the fungi eaten by her family, there can be no doubt in my mind that they were specimens of the *Amanita phalloides* or *A. verna*. These two species are often with difficulty distinguished from each other. Those eaten by her family were of a beautiful, ivory white throughout, with the stem four or five inches in length and bulbous at its lower extremity. It is from this latter characteristic that it is called by the French *A. bulbeux*. The symptoms in the Everett family correspond almost exactly with those in six cases of poisoning from the *A. bulbeux*, quoted in the *London Medical Gazette*, vol. xxv. p. 110, quoted from *Bulletin Méd. du Midi*, one of which was fatal.

I was not equally fortunate in securing an accurate description of the fungi eaten by the Thorne and Zimmerman families. When Dr. Card was called to the Thorne family, he had a basketful of fungi gathered from the same ground from which those cooked had been taken the day before. On presenting these for examination to a neighbour, who was familiar with the distinctive characteristics of the wholesome and poisonous mushrooms,

about one-half were rejected as poisonous. His distinction between the two was the colour of the gills, those of the poisonous being white. The shape of the stems was not noted. There can be no reasonable doubt that those rejected as poisonous belonged to one or the other of the above-named poisonous species. In the case of the Zimmerman family the means of identification are very imperfect. The boy Baker was accustomed to gathering mushrooms, and Mrs. Z. to preparing them for the table, and the family believe that those eaten "were genuine mushrooms, but were poisonous from age and the place where they grew, which was near a swampy part of the farm."

The Thorne family were equally confident as to what they ate, and for the same reasons, but in their case it is certain that at least one-half were poisonous.

This brings us to the important question, Is the common mushroom poisonous under any circumstances? By many this is believed to be true. Christison says that the *Agaricus campestris*, or common mushroom, is believed by some to be unsafe toward the close of the season, though he has not found them so after eating freely of them. Porcher, in an elaborate paper in vol. vii. of the *Transactions of the American Medical Association*, on the "Medical and Toxicological Properties of the Cryptogamous Plants of the United States," does not allude to a single case of poisoning by the common mushroom. The *London Medical Times*, vol. xxiv., 1851, gives the report of the death of two Belgian officers after eating mushrooms, coupled with the statement that the poison is contained in the *A. campestris* after a certain stage of growth. This is the only instance which I have been able to find reported of death attributed to the common mushroom, and no data are given by which the correctness of the opinion may be verified. They have been frequently eaten in an advanced stage by my own family; and it is asserted by connoisseurs that they are then of much finer flavour than in the earlier stages of development.

An article attributed to Prof. Ponfick, of Breslau, has recently been largely circulated in the newspapers, in which it is asserted that all common mushrooms are poisonous. In reference to this, it is sufficient to state that many varieties of fungi are eaten largely in Germany, which are rarely eaten in this country. The term mushroom, in this article of Prof. P., may embrace many varieties. If it referred to the *Agaricus campestris* it would be enough to point to its enormous consumption almost everywhere with almost absolute impunity. It is true, as Christison states, that on certain persons all mushrooms act more or less injuriously, and when taken in large quantity, and for a long period, may be deleterious to any one. Idiosyncrasy, as has been observed in the case of many other articles of food, as oysters, fruits, etc., will account for some of these cases.

Worthington G. Smith,<sup>1</sup> author of an excellent little treatise upon mushrooms and toad-stools, says:—

“He has known cows to be very fond of mushrooms, and a friend of his in the country more than once has seen his cows, in the morning, go from mushroom to mushroom until all were consumed. Sheep, squirrels, birds, and many other animals, commonly eat raw mushrooms and many other fungi.”

In all the cases reported in this paper, there was a marked delay in the appearance of symptoms, but these were in all essentially the same, viz., vomiting and diarrhœa followed by prostration, accompanied in some with severe pain in the head. In no instance were there any symptoms of narcotic poisoning, at any rate in the earlier stages. All these cases conform in their general features to the cases of poisoning by *Amanita phalloides* reported by Mons. Pallois; and even in the case of the Zimmerman family, there are strong grounds for believing that some specimens of these must have been overlooked, as had happened in the Thorne family.

It is asserted by good authority, that when several members of a family have been poisoned by the same fungus, a portion have suffered from symptoms of narcotic poisoning, while others were affected with gastrointestinal irritation alone, but that these two classes of symptoms may occur in the same patient. This is understood to be true of poisonous fungi in general. Worthington G. Smith gives a graphic account of his own experience after eating a poisonous fungus, the *Agaricus sinuatus*, which was found in the woods. Within a quarter of an hour he was overtaken with strange, nervous depression, swimming of the brain, and violent pains in the stomach; soon had great difficulty in standing, and all his senses appeared to be leaving him. Two friends who had lunched with him suffered precisely as he had done, but were attacked by violent vomiting, and after a few days they recovered. He, however, was fearfully purged, suffered from headache and swimming of the brain; and not until a fortnight did he recover from “loathing and lassitude,” long and troubled sleep, and stiffness of the joints.

In the Everett family there were two cases of marked loss of power over the bladder, in one requiring a catheter.

In the cases of Mons. Pallois notable suppression of urine is mentioned.

According to Braconnot, quoted by Porelier, most fungi contain, 1st, fungin, which is the fleshy substance, a peculiar acid called fungic acid combined with potassa, and a sugar. 2d, two poisonous principles. One of these an acrid matter, which disappears when the plant is boiled, the other, more fixed, forms crystallizable salts with acids, which he found in the *Amanita muscaria*, and called Amanatine.

The term muscaria or muscarine has, within a few years, been applied

<sup>1</sup> Mushrooms and Toad-stools, how to distinguish easily the differences between Edible and Poisonous Fungi, with two large sheets. London, 1879.

to the poisonous principle of the *Amanita muscaria* or fly agaric. New interest has been imparted to it by its recent introduction into medicine, especially in ophthalmic practice.

Dr. Bartholow, in his Cartwright lectures, states that the general effects of muscaria are nausea, vomiting, diarrhœa, and severe eolic, which are due to the tetanic contraction of the muscular layer of the bowels which it produces, and active delirium, characterized by rambling incoherence, and a somewhat pleasurable excitement, resembling the effects of alcoholic intoxication.

During the stages of delirium the pupil is contracted and the vision is dim, blurred, and probably double. In toxic doses the agent produces epileptiform seizures, trismus, loss of reflex irritability, and coma more or less profound, after the period of intoxication. Death takes place from failure of the heart. No antagonism could well be more exact than that between muscaria and atropia. Smith states that some of the effects of swallowing *A. muscaria* are the same as from intoxicating liquors, others similar to those of haschisch; it is thus used in Siberia. The urine becomes impregnated, and is itself made use of as a means of perpetuating and distributing the intoxicating principle. Notwithstanding this, its use sometimes proves fatal, as in the case of the Czar Alexis.

Cases of mushroom poisoning, so called, may be divided into two groups: the first embraces those instances in which poisonous fungi are gathered by mistake, either by themselves, as in the cases of the old Scotchman and the Everett family, or found growing in company with those that are edible, as in the case of the Thorne family. There can be no question that the *Amanita phalloides* and *A. verna*, and especially the former, are the varieties that are almost invariably thus mistaken. These are very common; specimens of them vary in the length and shape of the stems, but they can always be distinguished by the colour of their gills. It must be carefully borne in mind that while the under surface of these two poisonous varieties is always white, that of the edible *campestris* is always of pink of varying shade. In the preparation of mushrooms for the table great care ought to be exercised in scrutinizing every individual that has been gathered for food, and, if the colour of the gills is not satisfactory, such should be immediately rejected. If this precaution is taken, and they are gathered only from the open field and not from the woods, it seems impossible that any mistake can occur, or that any strictly poisonous effects can result.

We have already considered the question of the asserted poisonous properties of *campestris* when old. Though we believe that there is no reason for the idea that these become strictly poisonous, they probably are less easily digested, and consequently are more likely to create disturbance of the stomach and bowels.

The other group embraces those instances in which persons, from curiosity, caprice, incorrect information, and perhaps from necessity, have eaten poisonous fungi which bear no resemblance to the *campestris*, and which cannot possibly be mistaken for it. Many cases of fatal poisoning have arisen from eating these poisonous growths. Besides the *campestris*, there is a large group of edible fungi which may be made to serve as a very important contribution to our list of articles of food. One of these, the common puff-ball, *Lycoperdon giganteus*, in the *early stages* of its growth, while yet pure, white, and tender, when sliced and fried in butter, rivals the most delicious omelet, and in the collection of these *no* mistake can possibly be made. Beyond this familiar variety, however, no one should venture, without being previously instructed by some one thoroughly familiar with the strange varieties, unless he is prepared to enter upon a series of experiments upon himself to test their wholesomeness. There is no simple test by which the poisonous can be distinguished from the wholesome, and the precautions here mentioned will be neglected by the foolhardy alone.

Not a summer passes that cases similar to these above related do not appear in our local papers. They excite but little interest, and I have been unable to find any hitherto published record of an attempt to identify the species. Our cases, with the exception of the last, occurred within a radius of less than seventy-five miles, in one season; they embrace thirteen individuals, of whom five died.

Statistics of the number of individuals poisoned by this means, and the mortality of the accident throughout the United States would be of great interest. There is reason to believe that the number of those who die every year from this cause is very considerable.

The value of edible fungi as a source of food supply is but little appreciated in this country. It is stated on the authority of the late Rev. Dr. Curtis of North Carolina, the eminent mycologist, that this form of vegetation abounds in the Southern States, and could be made to contribute largely to the support of human life as an article of food. In every part of the country the *campestris* is eagerly sought for; and could some means be devised for imparting information on the subject to the public, there are several varieties which could be gathered, that are not only nutritious, but quite worthy of being classed among the luxuries of the table.

Those desirous of becoming acquainted with this most interesting class of plants will find what they need in Cook's *British Fungi*, a duodecimo, and in Smith's *Plates*, coloured sheets, representing the edible and the poisonous varieties, with a descriptive manual.



## ARTICLE IV.

TRIGEMINAL NEURALGIA RELIEVED BY LIGATION OF THE COMMON CAROTID ARTERY AND NEURECTOMY.<sup>1</sup> By FERDINAND H. GROSS, M.D., Fellow of the Philadelphia Academy of Surgery, Surgeon to the German Hospital, Philadelphia, etc.

It is not proposed in this paper to treat *in extenso* of the general subject of trigeminal neuralgia. My object is to present a single case of this interesting, but dreadful disease, with a condensed clinical history extending over a period of more than nine years, to give an account of the means employed for its relief, and to offer, as I proceed, some incidental remarks.

John G., 64 years of age, a German, married, and by occupation a piano polisher, applied to me August 29, 1873, suffering from neuralgia of the right side of the lower jaw. This was his first attack of the disease, he being at that time in his 55th year. He had always enjoyed good health. The pain manifested itself in paroxysms, and was limited to the region of the lower jaw. There was no fever, pulse slow and without fulness, tongue coated and bowels constipated. Laxative medicines were given to correct the condition of the bowels and tongue. A third of a grain of morphia administered hypodermically at the seat of pain, gave prompt relief. Two decayed teeth on the affected side of the lower jaw were directed to be removed. The injection of morphia was repeated three times with good effect, relieving completely the recurring paroxysms. In about two weeks the patient was well, and returned to his work.

He remained free from the disease for three years and three months, the second attack not occurring until December, 1876. But then relief was not obtained until after three months. The patient did not at that time apply to me for medical advice, but consulted another physician, and not until June, 1880 (over three years later), when the disease returned a third time, did he again come under my treatment. Of his second attack he gives substantially the following account:—

Having for some days felt shooting pains in his lower jaw, which were increasing in severity and occasionally radiating to the corner of his mouth and lips, he applied first to a neighbouring apothecary, who was said to be also a physician. Morphia in powders and mixtures containing this and other narcotics were freely administered. The affected side of the face was repeatedly blistered; the result not being satisfactory, all his remaining teeth, sound and unsound, were next extracted, save only one lateral incisor in the upper jaw. Why this solitary tooth was spared from the useless ravages of the dental forceps, does not appear. When the patient again came under my care, several years later, this incisor was also removed, as, standing alone, it was worse than useless. The other teeth were not all removed at once; seven was the largest number extracted at any one sitting. No improvement followed this procedure. Indeed, what is asserted by writers on this subject, that true trigeminal neuralgia is aggravated by the extraction of the teeth, was verified in this

<sup>1</sup> Read before the Philadelphia Academy of Surgery, December 4, 1882.

instance. Apothecary and dentist now told the patient that they were unable to cure him, and that he had better apply to the surgical clinic of one of the medical schools of the city, and have the "nerves pulled out." He accordingly, in Feb. 1877, applied to the institution alluded to, when it was proposed to operate upon him at the clinic in the following month, and in the mean time some pills were prescribed. Several of these were taken and produced profound narcosis. Awakening from this condition the paroxysms soon returned and became so intensely severe, that he preferred not to have the operation postponed, and applied at once to another surgeon, who, however, did not advise any immediate operative procedure, but resolved first to try other means, among which was electricity. Very little medicine was given internally, only a small number of pills, the composition of which the patient does not know, were administered.

From the account given me, I judge that both the induced and the constant galvanic currents were made use of, and in the order named. The applications were made daily. At first there was not much change, but gradually there was some improvement, and, after persisting with the remedy for about four weeks, the patient was relieved, and again returned to his usual occupation. To recapitulate briefly: The first attack occurred in Aug. 1873, and lasted two weeks; the second, three years and three months later, and continued fully three months. The third attack did not occur until after another period of immunity of three years and three months, when, on June 9, 1880, the patient again came under my treatment.

When I saw him in his third attack he had already been suffering for a week or so. It might suffice to say, that I had to deal with a typical case of prosopalgia affecting the three divisions of the trigeminal nerve, but will refer in detail to the more important and significant features of the case. Whilst there were vaso-motor disturbances and trophic disorders to be mentioned presently, pain was, as is always the case in this disease, the most important symptom. It manifested itself in paroxysms that varied in duration, frequency, and intensity. The character of the pain was that usually described by authors, viz., piercing, flashing, tingling, burning, etc. In his work on the *Practice of Medicine*, the late Prof. Wood, of this city, remarks: "Language has been ransacked to find terms strong enough, and expressive enough to represent at once the intensity and extreme diversity of the pain." I may add in regard to this symptom, that the characteristic *puncta dolorosa* of Valleix existed in the peripheral districts supplied by the various branches of the fifth nerve. The hyperæsthesia of the right half of the scalp was so exquisite that the patient could not bear to brush or comb his hair. The acts of mastication and deglutition induced such paroxysms of suffering, that he would only at long intervals venture to take a little nourishment in a liquid form. To speak was at times positive torture, and he preferred to sit silently and alone in a darkened room, where he would remain for consecutive days and nights without retiring to bed. When food was presented to him he would often, by violent gestures and muffled groans, drive the person bringing it from his presence.

The *point apophysaire* of Trousseau was never found to exist in this case, although pressure was repeatedly and at different periods of the disease made upon the spinous and lateral processes of the cervical vertebrae, and upon the occiput in search of a tender spot. Disturbances of motility, such as muscular spasms of a tonic or clonic character, in the

domain of the facial nerve, as sometimes accompany this malady, were not noticed. I exclude here such grimacing expressions of a voluntary character as these sufferers sometimes indulge in when in the extremes of torture. Whilst it is scarcely to be assumed that the motor filaments of the third division of the fifth nerve could escape being affected, it nevertheless appears that the manifestations of the disease were mainly, if not altogether, through the sensory branches, and that, at all events, there existed no essential irritation in the facial nerve. The vaso-motor and trophic disturbances to be mentioned, were congestion of the conjunctiva, increased lachrymation, frequent flushing of the right cheek, accompanied with tumefaction and a glossy appearance of the skin; at times the venous turgescence produced a deep unilateral lividity of countenance. At such times the patient could not bear the slightest touch of the finger upon the painful points, nor could he utter a word, yet, when spoken to, he would occasionally place both hands firmly upon his forehead, and, after making several violent strokes downwards over his face, as if instinctively to unload the engorged vessels, he would answer a few words.

Herpetic eruptions upon the lips and cheek were sometimes seen. A yellowish fur upon the tongue was thicker and more tenacious upon the affected side; this one-sided coating of the tongue was frequently noticed. The buccal mucous membrane was swollen, and saliva would flow from his mouth. As regards the more general condition of the patient, it is to be said that he was losing weight rapidly from insufficient alimentation. He is a man of short and broad stature, five feet six inches in height, with a large full chest; his normal weight being about 200 pounds. He had always been temperate in the use of liquors; there was no malarial cachexia or anæmia; he had never been afflicted with rheumatism, gout, or syphilis. With the exception of the two previous attacks of neuralgia, his health had usually been good. Although living in an humble way, he had suffered no kind of privation and sustained no traumatism.

In regard to his family record, searching inquiries were made, but failed to reveal that his ancestors had possessed any peculiar tendencies to neurotic diseases, or that they or his immediate relatives had been or were affected with any dyscrasia. The patient is the father of seven children, five of whom are living and grown up, and the only abnormal circumstance concerning these is, that one of them, a girl 19 years of age, is a born imbecile. I do not pretend to say that there is any such relation as cause and effect between the neurotic affection that developed itself in the later years of the parent, and the congenital defect in the nervous system of the offspring.

When I saw the patient at an early stage of his third attack, the suffering was already severe, and the indications to relieve pain were so imperative, that the first thing to be done was to resort to that in this disease indispensable class of remedies, narcotics. Hypodermic injections of morphia had not been used by those who treated him in his second attack, and only by myself, and with good result about seven years previously. This mode of administering the remedy was again employed, beginning with the third of a grain. Partial relief followed for the greater part of twenty-four hours. The injections were continued once and sometimes twice a day for upward of two weeks, the dose being gradually increased. The condition of the patient was rendered thereby more tolerable, but relief was by no means complete. In the mean time his bowels were regulated by suitable laxatives. Hypodermic injections of atropia were next employed and in-

creased to unusually large doses; he became very tolerant of this powerful agent, but the result was less satisfactory than that obtained from the salt of morphia. These articles were occasionally alternated in their use. I did not believe in a malarial cause in this case, but to test the possibility of such an infection, free use of quinine was made, both in small and large doses, but the effect was negative.

As yet the patient presented no appearances of anæmia, but fearing an impoverished condition of the blood from his inability to take sufficient nourishment, iron was prescribed at different times, in the forms of the saccharated carbonate and tincture of the chloride, but the patient was not benefited by either. On the contrary, he complained of an uncomfortable fulness in his head, and became more flushed in the face. For these disagreeable symptoms there was no compensating effect upon the neuralgia. The use of iron, therefore, often so beneficial in some forms of this affection, was abandoned.

This may serve in a general way as an account of the treatment up to the 17th of July, when, because of a temporary illness, I was compelled to relinquish practice and leave the city for two weeks, placing the patient for the time in the care of a medical friend; who again gave large doses of quinine, and in combination with morphia, but the result was no better than before. Locally he applied the ointment of veratria. On my return I continued the use of this local remedy. It produced the characteristic prickling sensation and a certain degree of benumbing of the skin. Arsenic had its trial in the forms of Fowler's solution and in pills, but the disease would not yield. Iodide of potassium was equally ineffective. Some days the remissions were so illly defined that the suffering was described as continuous, but still marked by waves and darts of exalted pain.

Thus far such therapeutic means had been applied as we are wont to make use of as physicians; but the list of these articles is a long one, and was not yet exhausted. Having failed, however, to give more than temporary and partial relief by the use of internal remedies of acknowledged value, I turned next to surgery. The operation of neurectomy at once suggested itself. But what single operation could be resorted to with any hope of relieving an inveterate neuralgia affecting with apparent equal severity all the divisions of the trigeminus? The anatomical impossibility of such an achievement in the present state of surgical therapeutics is clear. It is true, that in operations upon a single nerve-trunk, authors sometimes speak of a dynamic effect upon other nerves, meaning thereby an alterative influence of the traumatic irritation, through reflex action upon near or distant nerves. But this so-called dynamic force in the therapeutic means of medicine and surgery, is one which we must confess our inability to estimate in advance with any degree of accuracy. We are left at best in these cases to await the result of experience, and may sometimes congratulate ourselves upon achievements we were unable to foretell.

Whilst reflecting as to what might be the best means the art of surgery had to offer for the relief of this sufferer, I found that compression of the

right common carotid artery relieved the pain in less than half a minute in the entire affected districts, save at one spot on the lower jaw, and here too it was rendered less intense. Ligature of the common carotid artery for the relief of prosopalgia was first proposed by Nussbaum, and has been practised by different surgeons with varying degrees of success.

Hueter, in the second volume of his *Grundriss der Chirurgie*, published this year (1882), alludes to the statistics of fifty-four cases, and adds that the figure of mortality of this group is of special interest, in that the operation was performed upon otherwise healthy persons; there were three fatal cases, a mortality of only 5 per cent. But we are reminded, that "aside from a vital prognosis of ligation of the common carotid, a regard is also to be had for a functional prognosis, and especially in respect to the brain functions."

The same author records, that in his first successful case of carotid ligation, the patient lost his memory of names. The disturbance of cerebral nutrition may not only be profound and lasting, but the effect may be progressive; and moreover the manifestations may be so varied and manifold that to consider them in detail would extend this paper greatly beyond its intended limits. In all cases of ligation of one common carotid, brain symptoms appeared, according to G. Fischer, in 32 per cent., and in one-half of these led to fatal terminations. An operation of such gravity is therefore not to be rashly resorted to, and we may well hesitate before undertaking it upon a patient already advanced in years. Nevertheless it is not without promise of good result. The foregoing clinical history has revealed that the case was a desperate one. The patient's life had become a continual torment. He had read in a newspaper of the suicide of a sufferer from this disease and voluntarily admitted that his own mind had begun to dwell upon self-destruction.

Having explained to him and to his wife the nature of the operation, its risks, and what good had sometimes been accomplished by it, admitting at the same time that further observations by the profession were needed to determine with more exactness its real value in this disease, he not only expressed his willingness to submit to the operation, but desired that it should be performed without unnecessary delay, since patient as well as medical attendant had lost hope of finding any means of speedy relief outside of operative surgery.

Accordingly he was admitted to a private room in the German Hospital, and on the 19th of August, 1880, the patient being etherized, I ligated the right common carotid artery with the assistance of several of my colleagues, and in the presence of a number of other members of the profession. The patient's short thick neck required a deep dissection to reach the vessel, which was secured at the point of election just above the omohyoid muscle. A carbolized silk ligature was the material used. It was not cut off short, but allowed to hang from the external wound, and this was closed by three silver sutures. The usual antiseptic precautions were observed, with the exception of the carbolized spray, which was not used. After recovery of consciousness the patient was interrogated as to his

feelings. He pointed to the spot on his lower jaw as being still somewhat painful, but expressed himself as relieved at all others.

Desirous of knowing what might be the influence of the ligation of so large a bloodvessel upon the surface temperature of the two sides of the face, I requested Dr. H. S. Bissey, at that time one of the resident physicians at the German Hospital, to make some comparative observations. The surface temperature was carefully taken, with J. Hicks's English thermometers, over corresponding points upon the two sides of the face; the thermometer being allowed to remain eighteen minutes on each point. On the day before the operation the temperature on the two sides of the nose was found to be the same, viz.,  $95.3^{\circ}$  F., on the cheek of the diseased side  $95^{\circ}$ , on the sound side  $95.2^{\circ}$ ; on the temple of diseased side  $96.1^{\circ}$ , on sound side  $96.7^{\circ}$ ; thus showing the greatest difference at the points farthest from the median line. The sublingual temperature was the same on both sides, viz.,  $98.7^{\circ}$ . Thereafter the surface observations were confined to the cheeks.

On the 19th, and just before the ligation of the artery, the temperature on the unsound cheek was  $95.1^{\circ}$ , and on the sound cheek  $95.2^{\circ}$ . On the same day after the operation, it was found that the mercury on the affected side had fallen to  $93.3^{\circ}$ , and risen on the sound side to  $96.1^{\circ}$ . The surface observations were continued for fourteen days after the operation, and the chart shows an average of  $95.3^{\circ}$  on the affected side, and  $97.5^{\circ}$  on the other side, or an average difference of  $2.2^{\circ}$ , the increase being in favour of the sound side. The lowest point to which the mercury descended on the diseased side was  $93.3^{\circ}$ , and this was, as has been stated, immediately after the ligation; the highest point on the same side was reached on the sixth day, when it stood at  $97.3^{\circ}$ . These extremes of the temperature corresponded as to the days on which they occurred, with the extremes noted on the sound side, where they were respectively  $96.1^{\circ}$  and  $98.9^{\circ}$ . The thermometer in the axilla indicated its highest point on the fifth and sixth days, when it stood at  $100.4^{\circ}$ . The pulse at no time exceeded 90 nor fell below 68 beats per minute.

The antiseptic dressings of the wound were not disturbed for two days; afterwards they were, as a rule, renewed twice in twenty-four hours. There was very little swelling, and externally the wound healed by first intention, except about the point where the ligature protruded. The sutures were removed on the eighth day. Occasionally there was some discharge from the track of the ligature. The latter came safely away on the sixteenth day after its application. The patient was allowed a bland liquid diet, but experienced some discomfort in swallowing for four or five days.

Twenty-four hours after the operation he began to complain of headache. It was not confined to one side, but generally diffused over the cranium and assumed a remittent type, but entirely disappeared after the ninth day. On the seventh day he noticed a defect in his vision. On closing his left eye, he found he could not see anything at all with the right. But this amaurotic condition was of short duration. In fifteen or twenty minutes from the time it was discovered, sight gradually returned, and has remained good ever since. This purely functional disturbance was probably due to a temporary anæmia of the retina.

The patient remained in the hospital nineteen days. As to the neuralgia, the immediate effect of the ligation was complete relief in the entire districts supplied by the first and second divisions of the trigemi-

nus, and such a modification in the domain of the third division, that pain was felt only at one spot on the lower jaw. I now have to mention an unfortunate occurrence. When the patient retired on the night before leaving the hospital, the atmosphere was very warm. The window of his room and transom over the door were both left open, but during the night there was a change in the weather, the patient was lightly covered, nurse and he were fast asleep, a cool wind blew through the room, and towards morning the patient awoke with a violent chill. He felt badly that day, but returned to his home where he was at once put to bed. On the evening of the fourth day after leaving the hospital his temperature has risen to  $102^{\circ}$  F., the pulse is 100, and respiration 36 per minute. There is dyspnoea and pain in the chest, rust-coloured, and occasionally bloody expectoration; a physical exploration of the chest confirms the diagnosis, the patient is down with an acute pneumonia of the right lung, affecting to some extent also the left.

It is not necessary for the purposes of this paper to relate with minuteness the daily condition of the patient during this intercurrent disease, nor to give the details of the treatment. I will therefore content myself with brief references to some of the more critical days.

On the seventh day he is weak and very despondent, refused during the night to take either medicine or nourishment. He will not answer questions unless repeatedly urged; but this unwillingness to speak is not now due to pain in the lower jaw, for he has not felt a single twinge of neuralgia since the onset of the pneumonia. This entire absence of pain in the lower jaw at this time, I believed to be due to the inflammation of the lungs acting as a powerful revulsion, and that when its derivative effect would be over, the pain would return at that point where it had not been relieved by the ligation of the carotid. The patient continued greatly discouraged and wished that death might end all his suffering.

On the ninth day he is in a more hopeful state of mind; the temperature is  $99.2^{\circ}$ , pulse 80, and respiration 30. On the twelfth, however, his condition is exceedingly critical, but passing to the eighteenth day of the disease we find the temperature normal, pulse 66, and respiration 22. In a few days more, resolution has taken place, and the patient is convalescent. But now the neuralgia in the lower jaw returned, and by the 6th of October is quite severe. He needs building up, and is put upon cod-liver oil and saccharated carbonate of iron.

By the 20th of October the pain is so bad that he cannot utter a word, and all his answers are made in writing, even when they are in monosyllables. But the pain does not extend beyond the lower jaw. Electricity is next brought into use, beginning with the faradic battery. Whilst one pole was being applied alternately to the nape of the neck and to the mastoid fossa with the sponge, and the other pole with the wire brush to the lower jaw and cheek, the patient began to speak, and continued to converse freely. These applications were made daily, until the 1st of November, with sufficient improvement to enable him to converse and take nourishment with more comfort. But the occasional use of narcotics was indispensable. The Brown-Séquard neuralgic pills were given; they are composed of the following eight powerful agents: opium, conium, hyoscyamus, ignatia amara, aconite, cannabis Indica, stramonium, and belladonna! Doubtless there is sometimes a special virtue in polypharmacy, and a combination of this kind might be expected to demonstrate it. These pills had a stimulant narcotic effect, and gave the patient some temporary

relief, but not as much as large doses of morphia administered alone hypodermically. After giving them for some days, a good deal of muscular tension was produced, with occasional twitching through the entire body, the patient feeling as though he were being suddenly lifted from his chair. When the pills were discontinued these symptoms subsided.

To give electricity a fair trial, the faradic gave place, on the 1st of November, to the galvanic battery, and daily applications of the constant current were continued for two months, with few omissions, and then persisted in for a month longer every third or fourth day. Meanwhile the patient was taking the thirtieth of a grain of arsenious acid thrice daily, its use being occasionally suspended for a few days.

During this long use of electricity and arsenic, which brought us into February, 1881, there was considerable improvement in several respects, especially in nutrition. His appetite and sleep continued good; he could eat most of the time without pain, which was limited to one small spot. His weight increased to 210 pounds. The use of arsenic is continued during February, and the constant current is still occasionally applied. Gradually there is an unfavourable change. The good effect of electricity seems to have reached its acme; indeed, the patient declares that it now does him harm, although I am using weaker currents. The pain radiates to the corner of his mouth and lower lip, and he refuses the further use of the battery.

In the early part of April his suffering is intense, and I again turn to surgery. He was readmitted to the German Hospital, where, on April 19, 1881, just eight months after the ligation of the common carotid, I performed neurectomy upon the inferior dental nerve, the patient being etherized. A curved incision was made, with its convexity presenting downwards and forwards, including the anterior lower edge of the masseter muscle; the bone was trephined at the junction of the body and ramus; the nerve put upon the stretch in both directions and a portion excised. The accompanying artery was severed at the same time, but the hemorrhage was insignificant. On the same evening the patient complained of deafness of the right ear, and pain in the right hip in the region of the great sciatic nerve, but all pain about the jaw was gone. The deafness and a giddy feeling about the head disappeared in a week. The pain in the hip lasted only a day or two. On the tenth day after the operation the wound presented a favourable appearance. The stitches were removed, and the patient directed to take an airing in the sunshine. I am indebted to Dr. Strittmatter, the resident physician, for some notes on the case.

The patient remained free from neuralgia after this for about one year and three months, and I saw him during the following summer and autumn only incidentally. On the 19th of August, 1881, he called at my office to pay his respects, reminding me that it was the anniversary of the carotid ligation. He looked exceedingly well, enjoyed a good appetite and quiet sleep; said, however, that he was growing too stout, and had increased in weight to 221 pounds. The only complaint he had to make was about a shortness of breath, and this prevented him from returning to work, and was, indeed, the first indication of an approaching new trouble of an entirely different nature.

During the winter of 1881 and 1882, his dyspnoea increased, and being besides somewhat lame from an old injury to his ankle sustained in his childhood, he could take no exercise at all, and was confined to his house. Under these bad sanitary conditions he again consulted me. The diffi-

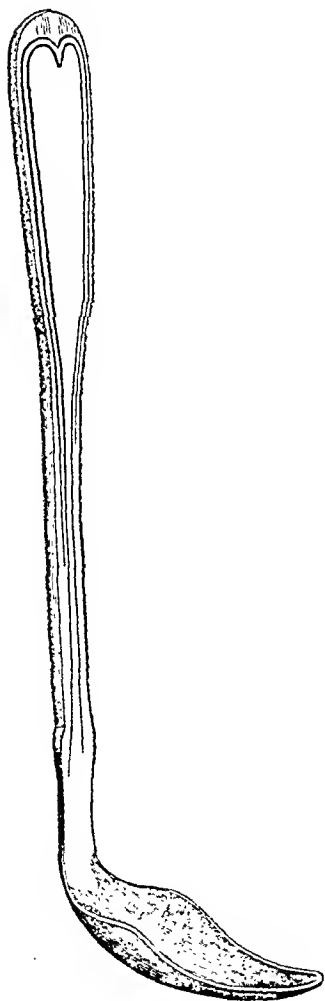


culty of breathing was at times very distressing, and he could scarcely ascend the stairs. His feet and ankles were swollen, and fears were entertained of approaching general dropsy. No disease of the heart or kidneys could be discovered, but there was a slight jaundiced appearance, and the urine was charged with biliary colouring matter. The treatment was therefore directed to the condition of the liver. I could detect no effusion in the pleural cavities, and believed the dyspnoea to be due to an œdematous condition of the lungs. To be brief, such remedies as blue mass, podophyllin, taraxacum, and nitro-muriatic acid, were at different times prescribed, with a free use of diuretics. A nutritious, generous diet was always insisted upon. Under a course like this, briefly stated, his condition gradually improved. The liver resumed its functions, the kidneys were kept active, respiration became easy, and ultimately the swollen condition of the lower extremities disappeared. In the course of the spring and early summer his health was fairly restored.

But in the latter part of August, 1882, his old enemy again attacked him. The neuralgia now recurring, for the first time since the carotid ligation (two years previously), in the upper part of the cheek, the infra-orbital region, and on the ala of the nose, and quickly following this, it returned in the lower jaw. In my absence from the city at the time, he was seen by my friend, Dr. Collins, who endeavoured to relieve him of several paroxysms by hypodermic injections of morphia. On my return, in September, I advised, first, neurectomy of the superior maxillary nerve. The patient pointed significantly to the scar on the lower jaw, and himself suggested that I should make one thing of it and repeat the operation there also. But I did not deem it prudent thus to increase the risk, and decided first to excise the superior maxillary nerve and await the result.

At the same hospital on the 14th of September last, the patient being again etherized, I performed the operation after the method of A. Wagner. A curvilinear incision was made along the lower border of the orbicularis palpebrarum muscle, and the tissues so dissected off as to expose the upper portion of the levator labii superioris, which was drawn to the inner side, and by means of a small aneurism needle, a silk ligature was passed under the nerve as it emerges from the infra-orbital foramen, and tightly drawn. The flap was then turned up, and just within and along the orbital margin the periosteum was divided and pried loose from the entire floor of the orbit by means of a small elevator. Next, an instrument, Fig. 1, similar to Wagner's spoon-shaped reflecting elevator

Fig. 1.



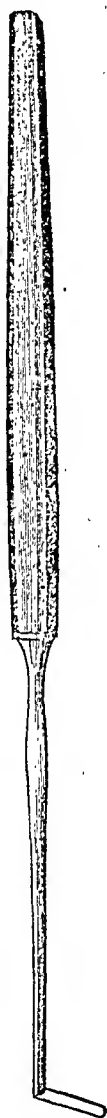
(which I had made for the purpose out of a silver teaspoon) was inserted under the periosteum, and the globe and other structures of the orbit lifted up and drawn a little forward out of the way. The polished convex surface of this elevator serves as a reflector. The course of the nerve was then apparent underneath the thin roof of the infra-orbital canal, and this was laid open with a narrow grooved chisel. The nerve was next lifted out of the bony canal clear back to the spheno-maxillary fissure by means of a small hook running off at a right angle from a slender shaft. The nerve was put upon the stretch and by a little delicate dissection separated from the cellular tissue in the spheno-maxillary fissure.

Before severing the nerve, the more modern operation of nerve-stretching may now be easily practised, so as to extend its effect clear back to the Gasserian ganglion within the cranium, and in some cases of intra-cranial causes, might do good. Wagner divides the nerve with a pair of scissors. I used a delicate neurotome, having a sharp blunt-pointed blade, but a fourth of an inch long, going off at an angle slightly obtuse, from a slender shaft, Fig. 2. This little blade was inserted into the spheno-maxillary fossa on the outer side of the nerve (*the handle of the knife brought to the nasal side of the orbit, which prevents it from becoming locked against the bone*), made to rotate on its long axis, when the little blade in its sweep from below upwards divided the nerve. I do not say that this little knife is essential, but when it is intended to divide the nerve at the foramen rotundum and the space narrow, it is a convenient instrument. The floor of the orbit varies very much in different skulls; in some the spheno-maxillary fissure and fossa are very narrow. The accompanying artery was lifted from the canal separately. It was small and white, and was for a moment taken for nerve fibre. I concluded to clear the canal of its entire contents, in order to make sure that no such fibres remained and that it might the better serve as a drainage channel for any pus or fluids that might accumulate under the periorbital after the operation. During the entire process the hemorrhage was slight, but we must remember that the carotid had been previously tied. Otherwise, I should have been careful to avoid dividing the infra-orbital artery. Finally, the nerve was drawn out of the infra-orbital foramen and severed from the peripheral branches. The wound was closed by four sutures.

On the second day after the operation the patient experienced a little pain in the lower jaw. In the district supplied by the superior maxillary nerve the neuralgia was all gone and there was anæsthesia of the cheek and side of the nose. There was very little escape of pus from the wound, and aside from nausea, and a little vomiting, which continued for two or three days, the patient did so well that he was able to return home in one week, with the wound almost healed.

For the next four weeks everything appears satisfactory and the patient is exceedingly happy, but now the pain returns in the region of the lower jaw where neurectomy had been performed eighteen months before. Pressure on the toothless gums brings on a paroxysm. That another

Fig. 2.



operation upon the inferior dental nerve would be required, was not unexpected, either by the patient or surgeon.

Upon my advice, he promptly returned to the hospital, and on the 11th of November submitted to the fourth operation. He was anaesthetized as before; but the jaw was this time trephined in two places. An incision was first made in the line of the old scar, just above the angle of the jaw, and the trephine so applied as to include a portion of the bone just above where it had been trephined before. A piece of the nerve was found sticking in the cancellous structure of the disk of the removed bone, having been divided in the act of trephining. It was plain, therefore, that the nerve had become regenerated and reunited. Next an incision was made along the edge of the jaw anteriorly and the bone trephined a little to the outer side of the mental foramen. The jaw is edentulous and narrow, but the first application of the small instrument used did not expose the dental canal satisfactorily. It was again applied so as to enlarge the opening in a downward and forward direction. The nerve was then seized with the forceps and after a little resistance easily drawn out its entire length. The wounds were cleansed with a solution of carbolic acid and dressed with carbolized oil. No bad symptoms followed this operation. On the fifth day the patient was allowed to sit up, the pain being entirely relieved. The patient returned to his home in two weeks, with the anterior wound almost healed, while there was still some discharge of laudable pus from the posterior one. I desire to say that after the last two operations the patient was placed under the immediate charge of Dr. J. S. Miller, one of the present residents at the hospital, and to whom I am also indebted for some notes on the progress of the case.

When the question of the pathology or etiology of this case is approached, we find ourselves on difficult and uncertain grounds, but this is frequently so in severe and inveterate cases of prosopalgia. In proof of which we need only cite Rosenthal, who said: "In many cases, the diagnosis" (speaking of the nature and origin of the disease) "is merely possible with a greater or less amount of probability, and we can only arrive at greater certainty after prolonged observation." Neuropathologists are at present, so far as I know, unable to lay down rules which will enable us with sufficient certainty in many cases, to diagnosticate whether the cause of the neuralgia be central, peripheral, or intermediate in the nerve-trunk, or in the bony structure of the canals, through which, in the case of the trigeminus, a number of branches pass. But even when the cause can be confidently asserted to be intra-cranial, it may be impossible to understand its real pathological nature.

In the foregoing pages, such general causes as rheumatism, gout, syphilis, malaria, alcoholism, anæmia, and hereditary predisposition, have been incidentally referred to, but I believe we are justified in excluding all of these as etiological momenta in the present case. It is unnecessary to cite here any of those well-known cases in which irritation or compression of the nerve in its intra-cranial course was found to depend upon caries, exostosis, tumours, or aneurism. Nor need I cite those cases in which neuralgias of long standing have been cured by the removal of foreign

bodies that acted as peripheral irritants. In the case under consideration there is no history of a foreign body or any kind of traumatism. Whilst there were no manifestations of defective general nutrition, it remains a matter of speculation as to how far local mal-nutrition may have acted as a factor in the disease. In some instances inflammatory changes have been found in the neurilemma or in the nerve itself, whilst in others the examinations have revealed no appreciable structural change. If from the severe and chronic character of the disease in this patient, and its refusal to yield to certain remedies, and from the relief afforded in two of the divisions of the nerve by the ligation of the carotid artery, we are inclined to the hypothesis of a central origin, we are met, so to speak, by the absence of such manifestations as "extensive reflex muscular contractions during and after the attacks;" the absence too of vertigo, paralysis, local anæsthesia, and any kind of psychical disturbance, some one of which we might expect to find in a case of central origin of such chronicity. Besides, the presence of sensitive points along the nerve fibres, in the intervals of the paroxysms (as was the case here) is regarded by some authors as sometimes revealing a peripheral affection. I can only add that notwithstanding all we have seen of this case, further observations appear to be necessary to determine its true nature and origin.

Meanwhile the patient is relieved; and from the thorough manner in which the superior maxillary and inferior dental nerves have been excised, and from the continued immunity from pain in the ophthalmic division since the carotid ligation, we may now entertain the hope that the patient will be kept free for the rest of his life from the torments of a disease to which he has so often been a martyr.

Considering the patient's age, being now in his sixty-fifth year, he has stood the operations remarkably well. Anstie says: "Very few patients indeed are ever permanently cured who are first attacked with neuralgia after they have entered upon what may be called the degenerative period of existence;" and even says further on, "that trigeminal neuralgias which now occur for the first time, are utterly incurable," but he immediately adds that these cases correspond with the affection named by Trousseau "*tic epeleptiforme*," a group with which this case is fortunately not to be classed. The disease occurs most frequently after the fortieth year. In the article on "Prosopalgia" in the "*Real-Encyclopædie der Gesammten Heilkunde*," contributed by Seeligmüller, the statistics of Masius are referred to, "who counted in 200 cases, 6 between the ages of 9 and 30, 188 between the ages of 30 and 60, and 6 between the ages of 60 and 80." It appears herefrom that first attacks are comparatively less frequent in advanced age. Females are more prone to the disease than males. To quote Rosenthal on another point, he says: "That he has several times seen old men (60 to 70 years of age) suffering from melancholia, complicated with neuralgia of the dental branches;" these cases he attributes to

"senile changes in the osseous canals and arteries." But this patient has exhibited no psychical disturbances, and when free from the torments of physical suffering, has always shown a good-humoured, pliable disposition, and no abnormal mental irritability.

Before closing this paper, which has already reached a greater length than was intended, I will, at the risk of a little repetition, state concisely the effects of the four operations performed:—

1st. The effect of the ligation of the common carotid artery was immediate relief in the domain of the first and second divisions of the trigeminal nerve; the period of immunity from pain in the second division being fully two years, while in the first division the pain has never returned, the relief there being probably permanent, and can only be accredited to the carotid ligation. The effect of this operation upon the third division of the nerve was too transient to count for anything.

It is a great satisfaction to be able to add that no impairment of intellect has followed the ligation. After the lapse of nearly two years and a half no disturbance of brain functions has been noticed either by myself or the patient, or by any of those who are habitually associated with him.

2d. The first neurectomy of the inferior dental nerve, eight months later, resulted in a period of relief from the neuralgia of about one year and three months—to remain within safe limits.

3d. The last two operations, viz., the neurectomy of the superior maxillary and the repetition of the operation upon the inferior dental nerve, were performed within two months of each other, September 14th and November 11th, respectively, and may be considered together. The result thus far is entirely satisfactory, the patient being now completely relieved of the neuralgia.

I desire to express my acknowledgments for assistance in the several operations to my colleagues Drs. J. Collins, M. Franklin, and J. M. Barton, to Dr. Trau of the medical staff of the hospital, and to the assistant physicians who have been already named.

POSTSCRIPT, February 14.—I examined the patient again to-day, five months after the neurectomy of the superior maxillary nerve, and three months after the last operation upon the inferior dental nerve. There has been no return whatever of the neuralgia.

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#### ARTICLE V.

#### A CLINICAL STUDY OF SYPHILIS OF THE EYE AND ITS APPENDAGES. By LEARTUS CONNOR, A.M., M.D., of Detroit, Michigan.

EVERY tissue of the eye and its appendages has been invaded by syphilis. It is difficult to form an accurate estimate of the frequency of the

specific eye complications. DeWecker thinks that the eye is involved in only about fifteen per cent. of all the cases of syphilis.

The frequency with which the several tissues of the eye are affected varies greatly. Some tissues, as the iris, are involved in nearly every case. Others, as the optic nerve, are rarely attacked. In acquired syphilis, the iris is first affected and most frequently. Fifty per cent. of all the cases of iritis are due to syphilis. In hereditary syphilis the cornea is commonly the starting point of the disease. In acquired syphilis the order of attack of the several tissues is iris, choroid, retina, optic nerves, sclerotic, cornea, muscles, lids. In hereditary syphilis the order is usually cornea, iris, choroid, walls of the orbit, and lachrymal sac.

In males the eye is affected twice as often as in females. Thus far no reason has been found for the difference. The syphilitic affections of the eye are most common from the ages of thirty to fifty years. In young subjects the eye complications of syphilis are less likely to be attended by anatomical changes, diagnostic of syphilis. Farther, in the young these complications are less obstinate and less dangerous than in the older subjects.

If it is asked why the eye plays such an important part in the course of syphilis, we are unable to answer with any degree of certainty. Probably it is due to the very abundant supply of capillaries and lymphatics in the eye. The probability is enhanced if we accept the theory advanced by Otis and accepted by Cornil, the latest French syphilographer. This theory locates syphilis in a degraded mass of protoplasm, which is capable of affecting all normal protoplasmic matter with which it comes in contact with its own infecting nature. During the period of development and life of the chancre, this matter is engaged in operating upon the protoplasmic matter immediately surrounding it, entering the circulation by the lymphatics. This infecting matter is gradually scattered through the system by means of the bloodvessels. As the blood current is slowest in the capillaries and the calibre of the vessels smallest, this syphilitic matter has a chance to infect some of the blood and cell walls of the capillaries. From this obstruction of the blood current in the capillaries we have the secondary symptoms, and in the eye the iritis, etc., belonging to this stage of the disease. During all this period and following it, the lymphatic vessels have been carrying the broken-down materials left in the tissues by this obstructed blood current, and the more degraded portions of infected protoplasm. Hence their inner coats and glands are kept in a more or less constant state of irritation. This ultimately results in a swelling of the walls, and consequent diminution of the calibre of the vessels. Hence the origin of gummy tumours, necrosed bones, syphilis of the organs of secretion and excretion.

The morbid anatomy of the syphilitic affections of the eye is identical with that of similar tissues of the body elsewhere affected with the same

disease. Thus we find the conjunctiva and membranes lining the tear passages affected as mucous membranes generally. In like manner, the syphilitic affections of the periosteum of the bones surrounding the eye and the tear passages are identical with the syphilitic diseases of the periosteum of the bones elsewhere. The same is true of eyelids, the cornea, sclerotic, iris, ciliary body, choroid, retina, optic nerve, etc.

One positive advantage of the study of the specific lesions of the eye is that we are better able to see the exact manner of their commencement, progress and termination, and the effects of treatment.

In a general way it may be said that the diagnosis of specific lesions of the eye depends upon the recognition of certain groupings of symptoms rather than any one peculiarity of any lesion or symptom.

If seen early in its course, and in well-nourished subjects, the treatment of syphilis of the eye is attended with the most brilliant results. Seen later and in debilitated subjects, the best executed plans of treatment sometimes fail of success.

Constitutional treatment is as important in specific diseases of the eye as in those of the skin, but frequently the local treatment is of even more importance, as it has reference to the preservation of the special structures and functions unharmed while the morbid elements are being eliminated from the body. Especially important is the local treatment of all forms of iritis alone, or complicated with lesions of other parts of the eye. Generally, to prevent the formation of adhesions of the iris to the lens or to break up the same, is to save the eyesight, while the failure to do this means the loss of the eye in whole or in part.

In all cases there is the greatest urgency to remove the inflammation or deposit before the normal tissue has been destroyed.

In this paper I shall direct attention to some of the characteristic specific diseases of the several ocular tissues. Brief abstracts of cases from my note books and from reported cases of other observers, will serve to illustrate each class of cases. Beginning with the eyelids, we find upon their surface all the specific lesions of the skin, so that it is needless to speak of them in detail. Secondary syphilitic sores and tubercular eruptions may be mistaken for epithelial cancer. Occasionally much damage is done to the eyelid from these lesions when not recognized sufficiently early, or when unwisely treated. A few months since a middle-aged coloured man was sent to me for the treatment of an extensive ulceration of the right upper eyelid. Already at his first visit extensive destruction of the lid had occurred. From a careful examination of the case I concluded that it was due to specific ulceration rather than epithelial cancer. Yet a skilful ophthalmic surgeon had made the reverse diagnosis, and had advised complete extirpation of the entire affected upper lid. This would have rendered it impossible to cover the eye with the lid and to keep it lubricated with tears. Hence the eye must have

been rendered useless or actually destroyed by the exposure. The treatment of the lid on the basis of a specific origin of the sore resulted in the saving of the entire remaining portion, so that he is able to cover the eyeball during the act of winking, and so to retain excellent vision. Of course the lid is deformed by the erosion.

Mr. C. S., a moulder by trade, came to me September 10, 1881, especially for the treatment of a tumour of the right upper eyelid, an ulcer at the edge of the same eyelid, and a deep open ulcer with indurated surroundings on the upper portion of the left upper eyelid. He gave a typical history of malignant, specific poisoning, then lasting nearly two years. The septum nasi, the turbinated bones on the left side of the septum, and the inferior turbinated bone on the right side were all so necrosed as to be readily removed at the first visit. He had large gummy deposits in other portions of the body, both knee and elbow joints were so enlarged and so stiff as to greatly interfere with all movements and to render some impossible. The pain in his head was severe and constant, his memory was greatly impaired, he complained of great distress in the precordial region, the respiration and pulse were quite irregular. Both testicles were swollen hard, and the right one was suppurating through the necrosed scrotum. Many lymphatic glands in different portions of the body were enlarged. To sum up in a word, the man was "rotten with syphilis." The necrosed bones were removed, the ulcerating surfaces thoroughly cleansed with disinfecting sprays, and the man ordered potass. iodid. grains thirty, every two hours. One grain of quinine and ten drops of the syr. ferri iodidi were also given at the same time. He was ordered to take a table-spoonful of cod-liver oil after each meal, and in addition to his regular meals two quarts of milk during the day. In about ten days the graver lesions were so under control that the iodide of potassium was stopped and small doses of the biniodide of mercury substituted. It was combined with small doses of quinine and iron. The cod-liver oil, the milk, and the liberal diet were still continued. To the tumours of the eyelids and the open ulcers, I ordered applied three times a day an ointment of the red oxide of mercury grs. xx. to the ounce occasionally; as the case seemed to be at a stand-still the potash iodide was substituted for the mercury iodide. Within two months the tumours and ulcers of the eyelids disappeared and the case slowly progressed toward a complete recovery.

In my own observation, specific tumours of the eyelids have been rare. They have uniformly occurred in bad cases of syphilis in which the general health was greatly broken. In every case I have been compelled to exert every known expedient to improve the general nutrition. The case reported will serve as a sample.

*Syphilis of the conjunctiva* may take on either of three forms—the chancre, the secondary lesions, or the gummy infiltrations. The chancre is very rare, and does not differ from the chancre of the penis. The secondary lesions are more common. They are small circumscribed spots, elevated, non-vascular, and of a reddish gray colour. The mucous patches of the conjunctiva often make their appearance suddenly after the patient has been free from all manifestations of the disease for years. The gummy tumour of the conjunctiva is rare, and generally involves other tissues



than the conjunctiva. Never having personally met a case of chancre of the conjunctiva, I quote from the *Brit. Med. Jour.*, Jan. 28, 1882, Mr. Wherry's report of a case :—

The patient was a shepherd, aged 23. On the conjunctiva of the right lower lid, a little to the outer side of the centre was an ulcer with an indurated base. Aside from the extensive chemosis the eye was healthy. The lymphatic glands in the parotid and sub-maxillary regions were large and hard. Nothing could be learned of the mode of infection. About five weeks after the eye affection secondary symptoms appeared.

Mr. Nettleship, in Berkley Hill's treatise, reports a similar case, occurring in a little girl, three years of age. In *Gaillard's Med. Jour.*, July, 1880, Dr. Wm. Mastin reports a similar case, occurring in a man. Many other cases are on record. Probably many are unrecognized.

*Paralysis of the ocular muscles* may be due to many causes, as cold, rheumatism, traumatism, various injuries to the brain, but it also occurs from syphilis. Von Græfe thought that one-third of the cases of ocular paralysis were due to syphilis. Thus it is wise in every case of doubt to entertain the possibility of syphilis. As illustrative of some of the features of this affection, I give the following :—

R. B., aged forty-five, married, a coachman, was referred to me for the treatment of his eye. A month previously his left eye had begun to turn outward, and the upper lid to droop, and he saw double. The weakness of the internal rectus of the left eye had so increased that at the time of his first visit to me he could scarcely move his eye to the median line, or elevate the upper eyelid above the middle of the pupil. He had discovered that by turning his head to the left and both eyes to the left, he was able to avoid the annoyance of the double images, which otherwise troubled him greatly. It will be observed that this relative position of head and eye made the visual axis parallel. Hence he often worked and walked on the street with his head so turned as to enable him to see single, the visual axis of the eyes and line of walking making with each other an acute angle, instead of being parallel. As to the origin of the trouble, I was unable to convince myself that it was due either to rheumatism, cold, or brain lesion. Suspecting syphilis, on careful inquiry, I found that two years previously he had a chancre followed by well-marked secondary symptoms. He had been treated and supposed himself perfectly cured. At the time of his visit to me there was no other discoverable sign of syphilis than the ocular disorder. Being convinced that the cause of the ocular paralysis was syphilis I placed him upon large doses of potassium iodide, and instructed him how to exercise his weakened ocular muscles. Within a week there was a marked improvement, and he steadily progressed to a complete recovery.

Monoocular mydriasis and paralysis of accommodation is quite a rare affection, especially if caused by syphilis. The following abstract of a case exhibits some of its features :—

October 20, 1877, Mr. H., a prominent lawyer in a neighbouring city, was sent to me for the treatment of his eye, which had given him great anxiety. His right eye had been lost in childhood by an accident. A few weeks previous to his visit to me, the pupil of his left eye began to

dilate, and for the first time in his life he experienced difficulty in reading ordinary print. This state of things had continued to slowly increase until his visit to me. On examination, I found vision  $\frac{20}{xx}$  for distance, but at reading distance he could not distinguish ordinary print. An appropriate pair of convex glasses enabled him to read with ease. His pupil was widely dilated, and almost immovable on exposure to light. The ophthalmoscope revealed nothing abnormal. The subject was a man of splendid physique, a brilliant lawyer, and very active in all of his habits. Although he had passed through great trials of the strength of his nervous system, there was no evidence of any cerebral lesion. The only clue to the origin of the disorder which I could obtain was an obscure history of specific infection several years previously. Accepting this clue, I inferred that there was along some of the lymph vessels a deposit pressing upon the affected nerves. Hence I gave him ten grains of potassium iodide every two hours. I also kept his pupil moderately contracted with the muriate of pilocarpine. Within a week he began to slowly recover. The doses of the iodide were gradually reduced, and after a month discontinued in favour of one-sixth grain doses of the biniodide of mercury. This was continued in combination with various blood and nerve tonics for some six months. There has been no return of the trouble.

I am well aware that this is an unusual result. The usual one is well given by Alexander, in the *Deutsche Med. Wochenschr.*, 1881. After detailing the statistics of thirty-five cases, twenty-five of which were syphilitic, five doubtful, and five traceable to other causes, he says:—

“No case recovered. Ten of the syphilitic cases had grave mental disturbances, and one died in an insane asylum. Thus it appears that monocular paralysis of the accommodation associated with dilated pupil is generally syphilitic, is one of the latest manifestations of syphilis, is always cerebral, precedes mental disturbances, and is incurable.”

Possibly Alexander's cases did not receive so energetic treatment as the case reported. But our experience has convinced us that when the nervous system is attacked by syphilis, as large doses of the potassium iodide should be given, and repeated as frequently, as the patient's general condition will render possible. Of course, doses of ten grains of potassium iodide are not to be given every two hours unless the case is carefully watched and the doses stopped on the appearance of untoward symptoms. Then the doses are to be diminished or stopped as soon as the end is accomplished for which they were administered. With these precautions, I have never seen any but the happiest effects from such doses as I have mentioned, in desperate cases of cerebral syphilis.

*Syphilitic inflammation of the lachrymal sac* is the most frequent form of syphilitic inflammation about the adult's eyes. It usually commences as a periosteal inflammation at the inner corner of the orbit. The sac ulcerates, if the disease be unchecked, and the ulceration extends to the conjunctiva. Stricture of the duct is quite sure to follow. If seen sufficiently early, specific treatment alone often suffices to cure the trouble. Later it must have not only specific treatment, but the local treatment for

stricture of the tear-passages. In view of the frequency of cases of this kind, citation of cases seems needless. The special point to be ever practically borne in mind is that vigorous antisppecific treatment is demanded at the very outset.

*Interstitial keratitis* is one of the characteristic specific affections of the eye. It is almost always due to hereditary syphilis. So well are these points established, that it will almost always be safe to treat the case on the specific basis, without asking any questions or making any other examination, if this form of keratitis be observed in a young child.

Hattie E., aged seven years, was brought to me for relief from blindness. I found her a pale, slim, light-haired girl, having an appearance of very imperfect nutrition. Her mother and her father, who accompanied her, were well-nourished, healthy appearing persons. She was their only child. During her previous life she was said to have been usually well. The eyes began to fail some two months previously; first the left and then the right eye became affected. With the left eye she could simply distinguish light from darkness; with the right eye she could see rather more, but not sufficiently to count fingers at the distance of one foot. A milky opacity, most dense in the left eye, occupied the place of the normal transparent corneal tissue. Around the sclero-corneal junction there was much vascular injection. The only other marked feature of the case was the presence of Hutchinson's teeth. From the father, evidence was obtained proving that he had been infected previous to marriage. With these data there was no difficulty in establishing the diagnosis of specific keratitis. By the use of the usual remedies, local and constitutional, the corneal opacities gradually disappeared, the eyes became perfectly clear, and the girl rendered the picture of perfect health.

In my experience, specific interstitial keratitis has occurred more frequently in girls than in boys. Of greatest value in the treatment of these cases I have found the local application of hot water, in a manner so systematic as to produce a tonic contraction of the bloodvessels of both the superficial and deep structures of the eye. It greatly adds to the rapid action of the mercurials and tonics. With the efficient co-operation of patients and parents, the treatment of these cases is quite satisfactory, although very tedious.

Syphilis may cause either form of iritis—the plastic attended by an effusion of lymph into the stroma of the iris and at the edge of the pupil—the serous attended by a hypersecretion of aqueous humour instead of plastic lymph, and the parenchymatous iritis attended with a swelling of the iris and hypertrophy of its contents or cellular elements.

Syphilitic iritis is only a variety of parenchymatous iritis. It is readily recognized by the fact that the disease is confined to one or two spots while the rest of the iris is of the normal colour, etc. The elevations of iris are called condylomatous nodules or pustules. Virchow calls them gummy tubercles and found them composed of a cellular element of a new formation with a large number of free nuclei surrounded by a mass

of blastema; some spindle-shaped cells were also found and traces of newly-formed vessels. An iris exhibiting this form of nodule certainly indicates syphilitic infection. The presence of the other forms of iritis do not certainly indicate such infection, although it does, as a matter of fact, often exist.

Practically, it is of importance to separate the form of iritis which occurs with early syphilis from that which occurs with tertiary syphilis. The iritis occurring with the secondary symptoms is readily controlled by treatment. The iritis accompanying tertiary syphilis is much more serious, and usually accompanies or precedes lesions of the retina and choroid.

The principal features of plastic iritis are shown by the following case:—

Mr. B., aged twenty-five, a postmaster in a distant town, was sent to me September, 1881, for the relief of a severe pain in his left eye. The trouble had commenced a week previously; he first thought that some dust had entered his eye; with the pain, the profuse lachrymation, circumcorneal injection, there was marked dimness of vision. On examination I found the vision of the affected eye reduced to  $\frac{20}{66}$ , the iris glued to the lens by a plastic exudate, the color a dirty brown, the entire conjunctiva highly injected, greatly increased at the sclero-corneal junction, pain much increased on exposure to light, entire immobility of the iris. There was no doubt about the iritis. As to its origin there was nothing characteristic about its appearance. He at first denied an exposure to specific infection, but finally, by cross-examination, and especially by the remnants of a secondary eruption, I was able to satisfy myself that the iritis was due to early syphilis. Hot water, atropine, oleate of mercury and iodide of potassium energetically pushed, soon succeeded in breaking up the adhesions, and otherwise subduing all the disagreeable symptoms. After five visits he was referred back to his family physician for continued specific treatment.

Most of the characteristic features of specific serous iritis occurring late in the disease are exhibited by the following:—

Mr. R., aged sixty-one, was referred to me by his family physician, for the investigation and treatment of a very painful acute affection of the right eye. A week previous to my first visit he had been taken with what seemed to be a malarial fever. After a couple of days the fever ceased, but his right eye began to trouble him. There was a feeling as if a piece of dirt was in the eye, followed by acute and severe pain, overflow of tears, loss of sight to a great degree, headache, circumcorneal injection. Gradually the pain increased, and the loss of sight and the vascular injection became greater. I found the iris darker in colour than the left iris, of a dull cast, capable of some motion as stimulated by light, slightly adherent to the lens. The anterior chamber was much deeper than it should be. The tension of the eyeball was increased, and lower fourth of cornea punctated. Briefly, we had a case of serous iritis.

In searching for the cause of this outbreak I was at a loss, till one day I chanced to look at the palms of my patient's hands, and saw a scaly eruption. From this, suspecting specific infection, I made careful inquiry, and found that forty years previously he had a chancre, followed by falling out of the hair, a general eruption and a sore throat, etc. etc. Follow-

ing this as a guide, I had the satisfaction of seeing his entire recovery with a perfect eye. Very often equally slight manifestations of the disease have been the means of unravelling the causation of an obscure case of iritis.

The only form of iritis which can be recognized as characteristic of syphilis is gummy tumour of the iris. If, in any given person, we find complaint of pain in the eye, and on examination, find a redness of a small portion of the sclero-corneal junction, we may look for one of three conditions: (1) A foreign body in the cornea near the reddened part. This is readily detected and removed. (2) A little ulcer as a phlyctenular. This is also readily detected. (3) Syphilitic iritis. In this case we will further find near the margin of the pupil a small elevation in the iris. Having made this observation, we have no need to ask any question farther than is needful to place the patient under vigorous anti-specific treatment.

Illustrating this form of iritis is the following abstract from my note book:—

Mr. T. was referred to me by his physician for the treatment of an acute affection of his left eye. He was a sporting man aged forty, of nervous temperament. His right eye was perfectly normal. The vision of the left eye was reduced to  $\frac{20}{60}$ . There was a considerable redness of the conjunctiva, most dense at the lower and outer margin of the cornea. The pupil was much contracted, and at its inner border opposite the spot of greatest conjunctival irritation was a slight elevation of the iris. The iris was also adherent to the lens. The colour of the iris was muddy over and about the swelling in it. There was a very considerable amount of pain in the eye. The diagnosis of specific iritis was at once made from these observations. An inquiry into his history showed that he had been infected a year previously. Hot water, atropia, and oleate of mercury and potassium iodide were systematically employed until the adhesions were broken up and the nodule absorbed.

Speaking in a general manner, the method I follow in using these agents is briefly as follows:—

If a few instillations of a four-grain solution of sulphate of atropine fails to loosen any of the attachments of the iris, I give the patient a prescription for a solution of atropia of the same strength as I have employed, one for some oleate of mercury 6 to 20 per cent. I then direct as follows: On reaching home get a basin of water as hot as the hand can bear. Comfortably seated in front of said basin the patient with his right hand keeps the affected eye bathed in the hot water for five minutes. After the eye has been dried, two minims of the atropia solution are dropped into the eye, care being taken to close the canaliculi by the tip of the forefinger. In fifteen minutes the same process is repeated, and so on for an hour. In two hours the hot water and drops are again used in the same manner for an hour, and so on during the entire day. At each time the oleate of mercury is rubbed into the temple. If the person is of a full habit, a saline purgative is ordered at the very beginning of the treatment. At

the patient's next visit to me, if the progress of the case has not been satisfactory, I instil an eight-grain solution of atropine, or even stronger, if called for, repeating it as frequently as the needs of the case demand. If there be considerable deposit which threatens the eye or the life of the patient, I resort to large doses of the iodide of potassium, twenty or thirty grains every two or three hours, until the danger is past. In the case last reported, twenty grains of potassium iodide were given every three hours for two days. In a short time the nodule was absorbed, and the eye left in a perfect state.

When these infiltrations invade the ciliary body as well as the iris, the result is often less satisfactory.

Mrs. R. was referred to me for the treatment of a trouble with her eyes, which followed an attack of diphtheria. I found a very pale anæmic woman, aged about sixty-five. Both pupils were contracted and bound to the lenses with adhesions. The overflow of tears, the circumcorneal injection, the muddy tint of the iris of either eye made it at once apparent that she was suffering from double iritis. But in the right eye there was also at the lower and outer and lower side of the sclero-corneal junction a swelling. The iris adjacent was involved, and the sclerotic. The pain was excruciatingly severe. Of course the lens had lost its transparency. The tension of the eye was not increased. Recognizing the case as specific, both from the physical appearances and the general history, I at once put into operation every known means for the absorption of this swelling, as well as the breaking up of the iritic adhesions. The latter was done with facility, but in spite of everything that could be done the tumour continued to develop, and with it the pain became intolerable. Finally, the right eye had to be enucleated. The left recovered unharmed. On examining the right eye after removal, it was found that the infiltration had not only destroyed the structures which could be seen in front of the eye, but also a considerable of the lens, ciliary body, and vitreous. The rest of the ciliary body was covered with plastic lymph. The inflammatory process had involved the retina, choroid, and even the optic nerve. It is quite probable that the extensive ravages of this growth were due: (1) to the considerable start that the disease had gained ere treatment of a specific nature was begun; (2) to the depraved general condition incident to her advanced age, general frail constitution, and previous illness. Possibly the eye might have been saved, had the treatment commenced with the first symptoms.

*Syphilitic retinitis* is a very rare disease. Cohn, the ophthalmic statistician of Germany, states that, in 20,000 cases of eye-diseases, there was not a typical case of syphilitic retinitis. Yet a few undoubted cases are upon record. From these we learn that it occurs with or shortly after the appearance of the secondary symptoms. Statistics far larger than Cohn's show that it occurs in the proportion of three or four cases in a thousand. Its course lasts weeks or months. The sight fails rapidly. The inflammatory changes consist chiefly in a serous infiltration of the retina and sclerosis of the connective-tissue elements. The prognosis is good if the patient be seen early in the attack, as the inflammatory changes do not, as

a rule, affect the nervous elements. The treatment is to bring the patient quickly under the influence of mercury and keep him there. The eyes should be protected from light, and the ciliary muscle kept paralyzed with atropia. But one typical case has occurred under my personal observation. This recovered after about ten months, with perfect vision.

*Syphilitic irido-neuro-retinitis* is a more common affection, and like it rescued by the ophthalmoscope from the shadowy region of amaurosis. From the following case its salient features may be gathered:—

Mr. M., a medical student, applied to me for relief from his failing vision. On examination, I found that his vision in the right eye had been reduced to  $\frac{20}{60}$ , and to  $\frac{10}{60}$  in his left eye. The iris was attached at many points in either eye. The vitreous of each eye was filled with floating black specks; the optic disks were almost entirely obliterated by the swelling of their structures. The retinal veins were greatly engorged, and the arteries reduced to a small thread. The tension of each eye was much more than normal. The field of vision was reduced to objects immediately in front of the eye. The pain in the head and eyes, the flashes of light, he described as dreadful. He gave a distinct history of specific infection, but at the time of his visit to me it was apparent only in his eyes. To reduce the ocular tension, I at once extracted from each temple six ounces of blood; after this the tension was not above the normal. Hot water and atropia and the oleate of mercury were used energetically until they had dilated the pupil fully. After a purge of calomel, potassium iodide was given in ten-grain doses every two hours. The eyes were protected completely from the light, but the patient was not confined to a dark room. By the second day the iris was relieved from its attachments. In a couple of weeks the vitreous began to clear up, and the swelling of the optic nerve papillæ to decidedly decrease. Vision now began to improve gradually. The eye tension returned twice, and was relieved as at first by the local abstraction of blood from the temple. The recovery was slow, but finally complete vision was restored.

Many of these cases are not seen till irretrievable damage is done. When too late for relief, such often frequent the office of the ophthalmologist. As the special features of this affection are identical with the same affection produced by other causes, its differential diagnosis cannot be made out from the eye symptoms alone.

*Affections of the optic nerve* from syphilis are confined mostly to the tertiary stage. This is worthy of note, because, if recognized sufficiently early, they may be hopefully treated. Their relative frequency may perhaps be gathered from Galezowski's statistics of 166 cases. Of these 50 per cent. were due to diseases of the brain and spinal cord. The origin of these diseases of the nerve-centres is not stated, but it is quite probable that some of them were due to syphilis. Thirteen per cent. were due to traumatism, 9 per cent. were due to alcoholism, 8 per cent. were due to syphilis, and the remaining cases to a great variety of causes.

If recognized early, there is good reason to hope that syphilitic affections of the optic nerve may be so treated as to save good vision. But

how may it be thus recognized? Is there any outward symptom by which an observer may recognize it? None whatever; as experience has shown that grave lesion of the optic nerves may long continue before the patient complains of loss of sight or any other unpleasant symptom. Such being the case, it is clear that the only method by which we may hope to recognize the beginnings of syphilis of the optic nerve is by the routine use of the ophthalmoscope in every syphilitic case, from its commencement to its termination. This may readily be done with less trouble than is required for the examination of a heart. In this manner it has occurred to me to prevent the ravages of extensive specific disease of the optic nerve in several cases.

Further, in all cases of cerebral irritation, the eyes should be examined even if there be no eye symptoms.

During an extensive study of the effects of syphilis upon the brain meninges, Lang has had Schnabel examine his cases with an ophthalmoscope. His published results show that these ophthalmoscopic examinations may greatly aid diagnosis when otherwise meningeal irritation could only be surmised. Thus, Schnabel found in many cases that the ophthalmoscope revealed the presence of inflammation of the retina, or choroid, or both, although the patients had not complained of any trouble with their eyes. In all cases of syphilis attended with persistent pain in the head, with dizziness, nausea, loss of spirits, etc., other signs of cerebral disturbance, the practitioner should not neglect to make a careful examination of the eyes with the ophthalmoscope.

From this brief review of some of the syphilitic affections of the eye, we think the following points are made evident:—

(1) The study of specific ocular diseases is helpful in the diagnosis of certain obscure cases otherwise difficult to make out satisfactorily. Thus, a specific iritis will at once set at rest all doubts as to the origin of a series of indefinite general symptoms which have annoyed the patient and puzzled the doctor.

(2) The careful attention to these cases is the only method by which, in many cases, the eyes can be saved intact during the course of the disease. Surely, when such attention can save eyesight in some cases, it is criminal not to give it to every case.

(3) The study of these lesions calls for the most searching examination of the entire organism. Especially is this true of such affections as cannot be distinguished from like diseases of the eye due to far different causes. Thus, if the early treatment of a dacrocystitis be simply local, it is sure to fail if it be of specific origin. Hence, the only chance to avoid failure lies in such an examination as will reveal its specific nature. The same remark applies with even greater force to many other specific diseases of the eye, as will be gathered from our brief review. From this it follows



that, in every case, the only safe practice is to constantly entertain the possibility of specific infection.

(4) The treatment of every specific case calls for constant watchfulness of the eyes with the ophthalmoscope, otherwise lesions impossible to repair may be established before the practitioner is aware of their existence or of any danger. Perhaps in no class of troubles is it more apparent that the general and special knowledge of morbid phenomena need to be constantly combined in one person. The special practitioner needs to be a general one, and the general practitioner a special one.

103 CASS ST., S. W. COR. LAFAYETTE AVE.

## ARTICLE VI.

THE CLINICAL HISTORY AND EXACT LOCALIZATION OF PERINEPHRIC ABSCESSES. By JOHN B. ROBERTS, M.D., of Philadelphia.<sup>1</sup>

PURULENT collections in the cellular and adipose tissue surrounding the kidney are very properly termed perinephric, or circumrenal, abscesses. It has recently become somewhat customary to speak of them as perinephritic abscesses. I believe that perinephric is etymologically the more correct adjective. We speak with propriety of hepatic, pneumonic, and prostatic abscesses, instead of hepatitic, pneumonitic, and prostatitic abscesses. Hence perinephric, perimetrie, and perityphlic are preferable to the longer forms, which, moreover, in most instances are evidently derived from the corresponding term designating inflammation, while general analogy requires the nomenclature to have an anatomical rather than an etiological derivation.

Perinephric abscess is more common than is usually supposed, and its presumed rarity causes its existence to be often unsuspected.

*Causes.*—Inflammation and suppuration may occur in the tissue surrounding the kidney from contusions and other wounds, strains from muscular activity, exposure to cold, and various depressing blood conditions, such as septicaemia and typhoid fever. Again, perinephritis and perinephric abscess may arise secondarily from disease of the kidney. Inflammation of the renal pelvis, of the kidney structure, or of both, especially when suppurative or when due to calculi, cystic disease, or cancer, can easily induce inflammation of the surrounding cellular tissue. Abscess will almost certainly occur, if urine, pus, a fragment of calculus, or parasites escape from the kidney or its appendages into the meshes of its fatty envelope. In a similar way secondary perinephric inflammation

<sup>1</sup> Read before the Philada. Academy of Surgery, March 5, 1883.

may be caused by perforation of the colon, by typhlitis, perityphlitis, hepatic abscess, rupture of the gall-bladder, perforation of the diaphragm in cases of empyema or pulmonic abscess, by spinal caries, psoas abscess, peritonitis, pleuritis, and indeed by inflammation of any adjacent organ.

Operations upon the testis and cord and pelvic viscera, such as castration, excision of the rectum, and lithotomy, and puerperal inflammations may induce perinephric abscess on account of the continuity of the cellular tissue in the pelvis with that in the kidney region. Inflammatory affections of the genito-urinary organs are factors in the production of perinephric abscess of primary importance. These organs are embryologically and anatomically connected with the kidney through the bladder and ureter; hence the extension of the inflammation to the kidney and thence to the perinephric tissue is easily understood. Cases are even recorded as due to permanent catheters.<sup>1</sup> Another mode of transference is by the continuity of the retroperitoneal connective tissue. This may allow the morbid process to extend by continuity of structure from the membranous urethra, prostate gland, bladder, and seminal vesicles to the tissue around the kidney without involving the kidney or other structures to any noticeable extent.

The agency of the veins and nerves in establishing a pathological union between the pelvic organs and the renal region is doubtless very effective. Embolic and septic processes and neuropathic influences become very possible and intelligible when we think of the direct blood and nerve routes between the pelvic and lumbar regions. For example, what could be more direct than the connection of the testes and scrotum with the renal region by means of the spermatic vein and ilio-inguinal nerve. Many similar though less obvious anatomical bonds can be comprehended.

*Symptoms.*—The constitutional symptoms of pus in the perinephric tissue are liable to the variations seen in other suppurative inflammations. Rigors, febrile movement, sweating, anorexia, vomiting, constipation, and perhaps delirium are marked in acute cases, while in chronic cases there may be so few constitutional symptoms that the existence of internal suppuration is overlooked. Constipation is sometimes very obstinate and apparently due to pressure on the colon. On the left side especially the colon can readily be compressed by swelling of the tissues in front of the kidney. When perinephric abscess follows puerperal perimetritis and similar conditions, the violence of the symptoms and a rapid death may interfere with recognition of the secondary trouble near the kidney.

The fever is sometimes continuous, and resembles typhoid fever; at other times its intermittent character suggests malarial influences. In perinephric abscess which has been allowed to burrow, septicæmic symptoms become prominent.

<sup>1</sup> Niden, *Deutsches Archiv für klinische Medicine*, 1878. Bd. xxii. Fälle 92 and 93.

The pain in its onset is often sudden. It is usually referred to the loin and side, is increased by pressure, and may shoot down the thigh, or into the genital region. Pain in the scrotum and penis at times occurs as a quite prominent symptom. Retraction of the testicle towards the inguinal canal may take place. It is stated that this does not occur, even when pain is experienced in the organ, unless there is, in addition to the perinephritis,<sup>1</sup> disease of the kidney, such as calculous nephritis. If this is true, it is a valuable diagnostic point in the differentiation of secondary from primitive perinephric abscesses. I doubt the accuracy of the statement. Nieden in his table records only sixteen cases in which pain was noted in the abdomen, groin, thigh, and genitals. Gibney has seen cases in which pain was felt in the knee as in coxalgia.<sup>2</sup> The lumbar and other pains may remit, disappear entirely for several days, or be altogether absent. The pain of perinephritis causes the patient to immobilize the spine, and assume, according to Gibney,<sup>3</sup> a stooping posture with the shoulders elevated.

Spasmodic action of the psoas muscle often induces, in the course of a week or ten days, flexion of the thigh upon the pelvis. The pain may be relieved by this posture. It is not uncommon in subacute cases for the patient, in order to relax the psoas, to walk with the body bent forward, and with the hand of the affected side resting upon the middle of the thigh. To relax the parts, the trunk is sometimes bent laterally, so that the ribs approach the iliac crest.

The position of the thigh is a symptom of great value, and may be attributed to coxalgia or rheumatism instead of to perinephritis. I believe flexion of the thigh to be an accompaniment especially of perinephric abscesses at the lower third of the kidney. It is recorded as observed in 27 out of 166 cases tabulated by Nieden. The flexion may be merely sufficient to prevent extreme passive extension of the hip, or so great as to draw the thigh firmly up against the abdomen. When thus bent, pain may be absent, but the slightest attempt at extension causes complaint. The hip may therefore be continuously flexed. Hence the patient may scarcely be able to turn over in bed to allow examination of the loin. All motions of the hip except extension may be perfect and painless. Difficulty in voluntary adduction of thigh has been mentioned by Gibney<sup>4</sup> in a case in which the thigh was semiflexed, and rotated outward. In another case he found towards the end of the affection slight resistance to complete passive flexion of the thigh on the abdomen. These symptoms pointed strongly to possible coxitis; but the subsequent history did not cause Dr.

<sup>1</sup> Nieden, *Deutsches Archiv für klinische Medicine*, 1878. Bd. xxii. S. 498.

<sup>2</sup> *Amer. Journ. Medical Sciences*, 1877, vol. i. p. 399; *Id.*, 1878, vol. ii. p. 403; and elsewhere.

<sup>3</sup> *Chicago Medical Journal and Examiner*, June, 1880.

<sup>4</sup> *Amer. Journ. Med. Sciences*, 1877, vol. i. p. 395 and p. 401.

Gibney to change his diagnosis of perinephritis cured by resolution. The same author has described<sup>1</sup> a case where adduction in addition to flexion existed. Cure followed incision giving escape to about a pint of pus.

These abnormal positions and interferences with function of the thigh lead in subacute cases to a gait that is remarkably suggestive of the second stage of coxalgia. When pain in the knee coexists, the acutest observer must be guarded in diagnosis and prognosis. I have found one case reported<sup>2</sup> in which convulsive movements of the leg occurred as a symptom of perinephric abscess consecutive to cancer of the kidney; and another<sup>3</sup> in which the large tumour caused œdema of the lower extremity.

Involvement of the lumbar plexus by pressure of the inflammatory products may give rise to general or localized anæsthesia, or temporary motor paralysis of the thigh. These symptoms occurred in eight of the cases contained in Nieten's table. The same writer records a case<sup>4</sup> in which there was paresis of both legs; and another<sup>5</sup> in which a left side abscess was accompanied by left pleuritis and paresis of both legs and the right arm. The latter case went on to suppuration; in the former resolution occurred. Neuralgic troubles may be induced by similar pressure and interference with the nerve branches.

It is generally said that the urine presents only those changes incidental to the febrile condition, unless the perinephritis be secondary to calculous nephritis, vesical inflammation, or similar causes. Then it may contain blood, pus, albumen, and tube-casts. My experience shows that a large amount of albumen may be present, probably from venous obstruction, when no kidney lesion of moment exists. It is remarkable that in Nieten's table there is not a single case mentioned in which albuminuria without purulent urine was noted. This may be owing to careless observation by the original reporters. Hæmaturia is not very unusual at the beginning of traumatic perinephritis.

Incontinence of urine and frequent or painful micturition have been observed. These symptoms are probably due to the abundant urates or to other chemical changes in the urine occurring with the febrile condition, or to the disturbance of the innervation of the pelvic organs.

Distressing flatulency and irregular constipation have been noticed by Moxon,<sup>6</sup> who ascribes these symptoms to inflammatory thickening involving the nervous structures around the vena cava and aorta, and thus causing paralysis of the abdominal sympathetic. This is, he thinks, more likely to occur in left-side perinephritis, than in cases of disease on the right side, such as he describes in his remarks.

Dulness on percussion of the space between the ribs and the crest of the

<sup>1</sup> Chicago Med. Journ. and Examiner, June, 1880, Case XXVI.

<sup>2</sup> Nieten, Case 105.

<sup>3</sup> Nieten, Case 149.

<sup>4</sup> No. 151.

<sup>5</sup> No. 150.

<sup>6</sup> Lancet, May 1, 1875, p. 603.

ilium is usually found; and pressure made by the hands, placed one in front and one behind, will sometimes discover a tumour, or elicit a feeling of elastic resistance or indistinct fluctuation. The tumour thus perceptible is rounded, with smooth edges, and moves little, if at all, with the respiratory act. The girth of the lumbar region becomes from swelling unsymmetrical, and the affected side measures one to two inches more than the opposite region. This is best appreciated by measurement with the tape, for the swelling may be general and not localized. There may also be broadening of the buttock, effacement of the normal hollow in the loin, increased girth of the upper portion of the thigh, effacement of the dimple over the trochanter, and spinal deviation towards the diseased side. The tumour discovered by palpation must be distinguished on the left side from feces in the descending and sigmoid portions of the colon; and on the right from liver tumour. Evacuation of the contents of the great intestine by laxatives and enemas, and the normal situation of the colon percussion-tympany, will remove one source of doubt; and the motion of the liver during respiratory acts will get rid of the other.

The tumefaction is accompanied by a subjective tenderness and sense of tension, which will probably be increased as suppuration occurs in the inflamed tissue. It may also cause dyspnoea from pressure upwards against the diaphragm.

Finally, in those cases of perinephritis which do not result in resolution, fluctuation becomes evident. This is preceded, perhaps, by rigors, local œdema, redness, and exquisite pain on pressure over the advancing pus. When the abscess is opened, either spontaneously or by operation, the febrile temperature falls, the digestive organs perform their functions properly, and the patient is relieved of pain. Cure soon follows, unless complications or extensive burrowing of pus have occurred. In chronic perinephric abscess the symptoms may be very obscure.

The clinical characteristics of perinephric abscess and its proper treatment will be illustrated by the following history:—

CASE I. *Perinephric Abscess, subsequent to Internal Urethrotomy, treated by Incision; Rapid Recovery.*—A gentleman who had suffered during a number of years with an irritable stricture of large calibre, was subjected, in February, 1882, to internal urethrotomy. After the operation, which was done by a distinguished professor of surgery, a large bougie was passed (36 French). Subsequently he had in the course of a few days three chills; but was soon able, though weak, to go out of the house. The urethra was systematically dilated with large instruments during this period. Two or three weeks after the division of the stricture he consulted me, because of intense pain in the right lumbar region and right testicle, for which he had kept his bed during several days. There was great pain on motion, which sometimes persisted even when the man kept still; but nothing abnormal, except tenderness on pressure, could be detected in the loin. I looked upon the case as one of myalgia, or of

nephralgia; and prescribed quinia, morphia, and belladonna, and applied a blister over the painful area.

Considerable amelioration of pain occurred in a few days, and I thought he was getting well; but this was a very temporary improvement. I then examined the urine, which contained no pus, by the liquor potassæ test, and showed no bloody discoloration. It contained, however, a large amount of albumen. The pain continued in varying intensity, and was accompanied with great tenderness on both sides of the spine and over the sacrum. He complained of anomalous feelings in the right lower extremity, which was described as being like a "limb asleep" rather than painful. Motion, however, was good, though performed slowly and with care. No heart or lung lesion was discovered by physical exploration. There was no apparent fever, no chills, no special digestive disorder; and the urine was voided freely and in a large stream. No history of gravel having ever been passed could be obtained. A few days later I thought I detected a slight fullness near the lumbar spines, in the region of the kidney, but no fluctuation could be distinctly obtained. At this time the urine showed a slight trace of albumen, had specific gravity of 1012, and contained no sugar. I considered the pain which existed to be occasioned by pressure on the lumbar plexus by some kidney affection, probably due to the chronic stricture. The pain in the scrotum was less than formerly, but the pæresis of sensation in the thigh remained.

On March 24th the swelling in the loin was more marked, and the local tenderness great. A large bougie could readily be passed through the urethra. The introduction of a sound failed to discover any calculi or calculous material in the bladder. The morning and evening temperature was reported by the nurse as below 100°; there were no chills, and the pulse was 80 to 90. Dr. John Ashhurst, at my request, saw the patient with me in consultation, and thought there was œdema over the swollen surface. We made the diagnosis of abscess in the cellular tissue around the kidney, which Dr. Ashhurst thought to be still below the muscular masses of the back. Poultices and the application of tincture of iodine were resorted to as the local treatment.

Six days later I thought it would be proper to evacuate the pus, as fluctuation seemed more distinct. At this time the pain had become less severe, and there was no longer any albuminuria. Asking Dr. Ashhurst to see the case a second time, I found that he concurred in the belief that operation was advisable. I accordingly made a vertical incision, one and a quarter inches long, through the skin and lumbar fasciæ. Introducing my forefinger, I bored down through the softened muscles, between two lumbar transverse processes, until at nearly the full length of my finger I evacuated two or three fluidrachms of pus; a drainage tube was introduced, and the wound poulticed. Carbolyzed injections through the tube were subsequently used every day.

On the third day after this procedure, a note was made to the effect that there was little or no pain on pressure in the lumbar region, and that the pain and numbness in the right buttock and extremity had disappeared since the operation. The convalescence was rapid and uninterrupted. On the tenth day he was sitting up and walking about his room a little. About this time he began cautiously using a large bougie again. The last note, made about one month later, says he is strong and well, and walks a good deal. He still had a slightly tender spot over the sacrum near the middle line, and the stricture was irritable after smoking.

I have purposely omitted the details of treatment, because they are not important in studying the clinical history. The symptoms are, however, in my opinion, of great interest, because they localize so distinctly the position of the small abscess. The pain felt early in the disease in the scrotum and testicle, and the paresis of sensation, which soon affected the buttock and the front and outside of the thigh, show that the pressure was exerted upon the ilio-hypogastric, ilio-inguinal, genito-erural, and external cutaneous nerves. These nerves are branches of the first and second lumbar nerves, which also supply branches to the back. Hence it is evident that the abscess was situated at the level of the first and second lumbar vertebræ. This inference is rendered more conclusive by the existence of albuminuria, which was due to pressure on the renal vein causing congestion of the kidneys. This vein is known to be situated<sup>1</sup> on a level with the first lumbar vertebral body.

As the abscess approached the surface of the back, pain in the scrotum diminished, and albumen disappeared from the urine, because pressure was decreased. There was no tonic spasm of the psoas, iliacus, or pectineus muscles, causing flexion of the hip, as in the case which I shall presently describe, because the abscess was too high up to press upon the third and fourth lumbar nerves, whose branches supply the muscles mentioned. It is probable that if the incision had not been made, the abscess by burrowing downwards would finally have given rise to flexion of the thigh upon the pelvis. I do not feel sure of this, because the position of the abscess behind the kidney might have led to spontaneous evacuation through the muscles of the back before the quantity of pus had become sufficient to involve the structures opposite and below the inferior end of the kidney.<sup>2</sup>

These points in surgical anatomy I deem important, because I have not seen them mentioned in connection with perinephritis. They will serve as good guides in the determination of the position of the incision, when the surgeon feels called upon to explore a suspected perinephric abscess.

Cases are reported where incision or puncture failed to find pus in instances whose subsequent history confirmed the diagnosis of abscess. A more careful study of symptoms may hereafter enable us to localize the pus more exactly.

Untreated perinephric abscess, if life is prolonged, usually opens in the lumbar region; but the pus may be discharged into the colon, stomach, small intestine, pleural cavity, bronchial tubes, pericardium, or peritoneal

<sup>1</sup> See Braune's Topographical Anatomy, Bellamy's translation, p. 129.

<sup>2</sup> In January and February of this year (1893), after the above paragraphs had been written, this patient was treated by me for a chronic perinephric abscess, situated three or four inches below the cæcatrix of the first. There was no albuminuria and no scrotal pain; but flexion of the hip was marked. The abscess was evidently connected with the old seat of disease, for pus was subsequently evacuated also from the vicinity of the first incision.

cavity; or the abscess may open upon the surface in the hypochondrium, below Poupart's ligament, upon the buttock through the sciatic notch, or by perforating the ilium, or discharge into the pelvis of the kidney, the bladder, vagina, or urethra. The pus may find its way into the sub-iliac bursa, and, by the communication that often exists between this sac and the hip-joint, even enter the joint itself. It may burrow into the scrotum. The pus may amount to three or four pints, and may, especially in consecutive abscesses, be thin, ichorous, and mixed with urine. It may be offensive and fecal in odour, even when there is reason to believe that no intestinal fistule communicates with the pus cavity. In primitive perinephric abscess the pus is thick and odourless, and perhaps contains shreds of connective tissue. Trousseau has observed<sup>1</sup> emphysema under the integument of the back from an opening between the gut and the abscess. The large amounts of pus only occur when delay in operating has allowed extensive suppuration. Bowditch<sup>2</sup> believes in the frequent occurrence of thoracic complications from contiguity with perinephric abscesses. He describes two cases, in which he was consulted for lung disease, that were found to be perinephric abscesses opening through the lung.

The following case illustrates the course of the disease when not treated by prompt surgical measures:—

*CASE II. Probable Perinephric Abscess following Gonorrhœa; Condition not suspected; Death with Septicæmic Symptoms.*—This history, which dates back a number of years, is a humiliating one, for, though the patient was seen by myself and several other medical men, the possible existence of perinephric abscess was not suggested until death had occurred. When subsequently thinking over the circumstances, I became convinced that the purulent collection, for which we had searched in vain in the pelvic and anterior abdominal regions, should have been looked for in the lumbar region. Though proof was then unattainable, I believed, and still believe, the posthumous diagnosis probably correct.

The patient, on account of gonorrhœa, had retention of urine, which required catheterization. Subsequently orchitis with scrotal abscess occurred, and about the same time, or perhaps a little previously, a small abscess on the outer aspect of the left thigh appeared. Both these collections of pus were evacuated by incision. During the maturation and cure of these abscesses, the right hip became somewhat flexed. When I saw him after an absence of some weeks, I found the thigh firmly flexed, and the patient weak, nervous, and hysterical, afraid of any examination, and continually desiring morphia or ether. He could not move his thigh because of pain, nor would he allow it to be extended. It was thought probable that the position of the right limb was originally due to the patient having assumed this posture to keep the scrotum and left thigh free from pressure of the bed-clothes, and that the voluntary disuse of the joint during a series of weeks had induced in his irritable and nervous condition a hysterical contraction. Ether was administered, and the hip forcibly

<sup>1</sup> Clinical Medicine.

<sup>2</sup> Medical and Surgical Reports of Boston City Hospital for 1870.



extended with a cracking noise, similar to that heard in breaking up arthritic adhesions.

After regaining consciousness, the man could move the limb to a limited extent without marked pain. Permanent extension was made by attaching a weight to the foot. Five or six days later the weight was removed because of pain. The flexion then recurred. The etherization was done about two months after the time of contracting the original gonorrhœal trouble. Owing to unavoidable circumstances, I only saw the patient occasionally and at long intervals. The daily treatment was carried out by my medical friends, and occasionally either I or another surgeon saw him.

My notes, dated about six weeks after the day of etherization, show that the general condition had steadily become worse, notwithstanding the exhibition of quinia, iron, and milk punch. Hebetude, delirium, dry tongue, chilliness, sweating, emaciation, and great prostration made us believe that septicæmic processes were present. There was no marked pain except on attempting to move the right hip-joint; but some abdominal tenderness apparently existed. The urine was freely passed, no pulmonary change was found on auscultation, and neither palpation of the abdomen nor digital exploration of the rectum revealed the purulent accumulation sought for in the abdomen or pelvis. I have no note or recollection of the patient experiencing pain in the lumbar region; nor of the loin being examined with special reference to the possibility of the abscess being as high as the kidney.

Four months and a few days after contracting gonorrhœa, the patient died. After death, an attendant, in the words of my note book, "found gurgling at upper part of right thigh, as if a decomposing abscess had worked down from within pelvis or abdomen."

I now feel that the flexion of the thigh was probably due from the first to perinephritis, causing little or no lumbar pain, but which finally gave rise to an abscess in the cellular tissue around the kidney. This abscess increased and slowly burrowed behind the peritoneum and along the psoas muscle until it reached the groin. Here it would probably have evacuated itself spontaneously, if life had been prolonged. It is impossible now to determine whether examination of the loin would have led to its discovery, or operative treatment have been followed by convalescence.

*Complications.*—Numerous complications may arise if perinephric abscesses are allowed to increase indefinitely until spontaneous evacuation occurs. I have already spoken of the directions in which this may take place. The complications, such as peritonitis, which may accompany such events, need not be discussed. The kidney, according to Ebstein,<sup>1</sup> becomes involved secondarily from disturbance of its nutrition produced by the inflammation located in the perinephric structures. Cloudy swelling of the epithelial cells, necrosis or abscess of the kidney structures, and diminution and induration from pressure are mentioned by him. These effects can easily be understood on considering the clinical history of the case first reported, where there was abundant albumen in the urine due undoubtedly to pressure upon the renal vein.

<sup>1</sup> Ziemssen's *Cyclopædia of Medicine*, vol. xv. p. 592. New York, 1877.

The danger of thoracic involvement is insisted upon by Bowditch. In nine cases of perinephric abscess, auscultatory signs of pulmonary implication were discovered by him in seven. Although some of these presented no marked chest symptoms, he regarded these physical signs an important argument for operation in the loin, because they showed that the inflammation was travelling upward and beyond the original site.

*Diagnosis.*—In the very early stages of perinephric abscess the diagnosis is often impracticable. Especially is this so when the symptoms are not very pronounced, and when there have been no previous renal symptoms to direct attention to the vicinity of the kidney. The symptoms already described make the diagnosis easy, as a rule, when the inflammatory process has advanced beyond the initial stage. Lumbago simulates the pain of perinephric abscess, but it is unaccompanied by fever, and causes the patient to walk with a rigidity of spine that is different from the lameness due to the partially flexed hip of perinephritis. I must admit, however, that there may be little or no fever in the latter disease, and that the pain may cause a mere stiffness of the spine without any spasm of the psoas being present. Moreover, the impairment of the hip motions may in some cases of perinephritis occur late, or may, indeed, be altogether absent.

Aching kidney<sup>1</sup> and nephralgia, or neuralgia of the kidney, are terms indefinitely descriptive of pain in the renal region from unknown pathological causes. Aching kidney gives, according to Duncan, a heavy wearing pain, felt especially in the hypochondrium and frequently associated with pain down the limb and with irritability of the bladder. He believes that there exists swelling of the kidney or perinephric tissue, or both, which can be felt by palpation. The location of the pain in the anterior region, the fact, at least in women, that it is increased during menstruation, and the non-sequence of more pronounced symptoms are *supposed* to distinguish this condition from true perinephritis. Nephralgia may be recognized by the paroxysmal character of the pain and the known neuralgic diathesis of the individual, especially if the absence of injury or of genito-urinary irritation is conspicuous.

Organic affections of the kidney may of course be the cause of perinephric abscess by secondary involvement of the cellular tissue around the organ. The diagnosis of renal lesions, without perinephric abscess, is made by the symptoms peculiar to each. Cancer of the kidney is usually accompanied by hematuria, rapid decline in health, and perhaps later by the physical signs of a distinct growth and the involvement of surrounding viscera. The tumour may be nodular.

Renal cysts are not accompanied by local increase of surface temperature, nor by œdema in the lumbar region. These symptoms are distinct

<sup>1</sup> J. Mathews Duncan, *Medical Times and Gazette*, Nov. 16, 1878, p. 563.

tive of perinephric abscess. Calculous nephritis is usually preceded, or accompanied, by attacks of intense pain and perhaps vomiting due to small calculi passing down the ureter. The sudden relief of pain when the stone enters the bladder is almost pathognomonic. The existence of pus, blood, and gravel in the urine, when not traceable to bladder disease, always points to lesions of the kidney itself. Such occurrences are not part of the clinical history of perinephric abscess, unless it is secondary to inflammation of the renal pelvis (pyelitis), or to pylo-nephritis.

When percussion or pressure over one of the spinous processes of the vertebral column gives rise to pain, when there seems to be slight angular projection backwards, when straightening or extending the spine by suspending the patient from the armpits relieves pain, and when there is bilateral interference with the innervation of the legs, it is probable that vertebral caries exists. The similarity of some cases of perinephritis to this condition will be evident when I say that the spinal brace has been ordered<sup>1</sup> for a patient suffering with a perinephritis which finally required incision to evacuate pus.

Perityphlic abscess is not likely to be confounded with perinephric abscess, for the tumour-like mass of indurated cellular tissue in the latter case is higher and not so easily felt by palpation of the front of the abdomen, and there is a more marked tendency for flexion of the hip to occur. Perityphlic abscess, on the other hand, is more likely to present forwards, to cause œdema of the corresponding limb from pressure on the iliac vein, and when opened to furnish fetid or stercoraceous pus and gas. The numbness of the thigh and the hip-flexion found at times in perinephric abscesses may also be found in perityphlitis.

Masses of feces, and splenic or hepatic tumours may in rare instances simulate the indurated swelling due to perinephritis. The first can be removed by laxatives; the last two conditions are distinguished from perinephritis by the ease with which they are displaced downwards during inspiration.

Perinephric tumours are retroperitoneal, and therefore on the right side the ascending colon lies to the inner side of such a tumour, while on the left side the descending colon has a position in front of it.<sup>2</sup>

If the abscess around the kidney perforates the diaphragm, and discharges pus into the pleural sac or bronchial tubes, empyema or abscess of the lung may occur. These conditions may be recognized without the existence of perinephric abscess being suspected.<sup>3</sup>

Flexion of the thigh, if present, and the other symptoms of perinephritis, would attract the attention of the careful and intelligent observer,

<sup>1</sup> See Dr. Gibney's paper in *Chicago Medical Journal and Examiner*, June, 1880.

<sup>2</sup> *Nieden in Deutsch. Archiv für klin. Med.*, Nov. 1878, S. 500, quotes Wells and Simon.

<sup>3</sup> Bowditch, *Medical and Surgical Reports of Boston City Hospital*, 1870, p. 58.

as they did that of Dr. Bowditch. Cure may occur in such instances after the expectoration of 18 ounces of pus.<sup>1</sup>

Dr. F. Lange has recently reported a case, from Thiersch's clinic in Leipzig, where there existed empyema and a sinus on the front of the thigh, both apparently secondary to a perinephric abscess.<sup>2</sup>

I have purposely postponed the consideration of the differential diagnosis of perinephritis and coxitis, and of perinephritis and inflammation of the psoas muscle until this time, because of the importance and difficulty of the topics.

In perinephritis there is often flexion and painful rigidity of the hip-joint, with perhaps *ad-* or *ab-*duction of the thigh and pain at the knee. These symptoms at once suggest hip-joint disease. Usually in such cases, however, passive flexion of the hip can be made without causing pain, and may even relieve existing pain. Attempted extension of the thigh is, on the contrary, at once painful. This aids in diagnosing the condition from coxitis, where all motions are apt to be painful. There will probably be found less rigidity of the adductors in perinephritis than in coxitis.

In coxitis there is often fulness and tenderness on pressure over the trochanter or joint, pain on percussion of the femur, and subsequent shortening and atrophy of the thigh. There is, however, no fulness in the lumbar region, which is a frequent feature of perinephric abscess. The semicircumference of the trunk on the affected side will, in the latter disease, often be increased one to one and a quarter inches. Atrophy of the thigh occurs also in perinephritis if the limb is flexed and not used for a long time; hence great caution is at times required to avoid committing an error in diagnosis. Gibney believes that many reported cures of hip disease, with perfect return of function, are, in truth, instances of perinephritis cured by resolution, which have been mistaken for coxitis.

Inflammation of the psoas muscle and psoas abscess present some of the characteristics of perinephric abscess. Usually, however, there are associated with psoas abscess symptoms of caries of the vertebra, such as a painful spinous process, when pressure is made along the spinal column posteriorly. In psoas troubles there is apt to be more tenderness and pain in front than in perinephritis. The impaired motion of the hip-joint and the interference with the innervation of the thigh are similar to what is found in perinephric abscesses involving the psoas muscle secondarily. There is, however, neither pain nor fulness in the loin.

The diagnosis between coxitis or psaitis and perinephritis must in obscure cases rest upon the combination of symptoms and the progress from day to day. A careful study of the section of this article devoted to the symptomatology of perinephritis will render a diagnosis usually practi-

<sup>1</sup> Neiden, Case 98.

<sup>2</sup> New York Med. Journ., January 27, 1883.

cable within a short time. In the early stages an absolute diagnosis may be impossible.

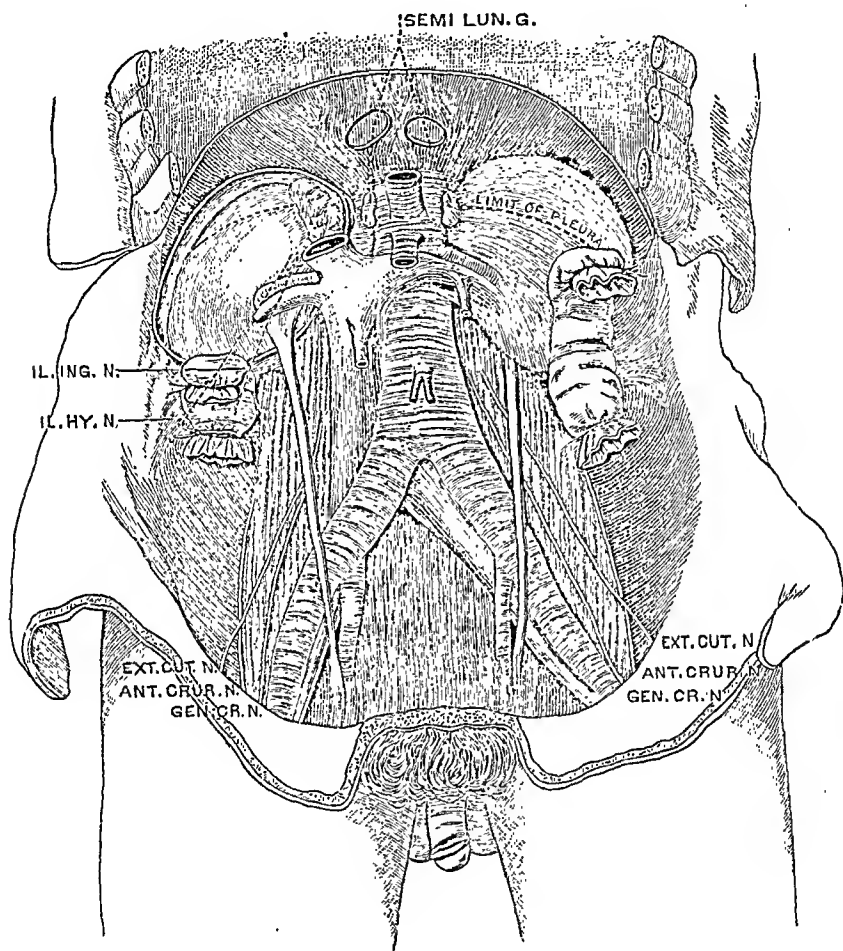
*Localization.*—The early recognition of the existence of perinephric abscess and the determination of its relative position with regard to the kidney is important. The promptness and efficiency of operative treatment must depend very much upon the early recognition of the exact position of the abscess. Cases have been reported in which incision or puncture failed to reach the suspected abscess-cavity, though the subsequent clinical history proved the correctness of the diagnosis. More exact comprehension of the bearing of locality upon symptoms, might, as is readily seen, have affected the position chosen for operation and thus have given earlier exit to the pus. The symptoms already described will enable the surgeon to make in the majority of cases the diagnosis quite early. I shall now therefore study the symptoms in connection with the surgical anatomy of the region, in the endeavour to bring out points which will make it possible to localize perinephric inflammation and abscess. As far as I know this line of investigation is new. Hence as no foundation for my conclusions has within my knowledge been laid by other writers, and as I have no corroborative evidence except in my own limited experience, the propositions and the deductions resulting from my dissections and studies should be accepted as suggestive and not final.

I arbitrarily divide the perinephric cellulo-fatty tissue into six tracts. The upper, middle, and lower anterior; and the upper, middle, and lower posterior tracts. There is of course no sharp definition between these regions, which are used to conveniently indicate the location of the disease. In discussing the subject I shall speak of inflammation and of abscess interchangeably though the symptoms of pressure are more marked in the latter event.

It may be premised as an axiomatic truth that, although there may be pains radiating in various directions, anterior inflammations will give rise to pain especially in the front or side of the abdomen, posterior lesions to pain in the loin. Tenderness upon pressure, œdema over the abscess and pointing will be similarly exhibited. The swelling, the tumour-like outlines and the feeling of resistance to palpation will naturally be the more evident in anterior lesions because the tissues between the disease and the surface are flaccid. Involvement of the chain of sympathetic ganglia, situated along each side of the spinal column, would occur in posterior lesions only. We, however, are ignorant of what symptoms would result from such inflammatory irritation or pressure.

In the two upper regions perinephric abscess is very liable to give rise to localized pleuritis of the bottom of the pleural sac. This is especially the case when the inflammation exists in the upper part of the *posterior tract*. The superior portion of the kidney lies upon the diaphragm, the lower margin of which crosses the back of the kidney in a direction obliquely

downwards and outwards. This is indicated in the wood-cut drawn from one of my dissections. This relation of the diaphragm is also shown by the depression of the kidney which occurs on deep inspiration. Holden says it descends nearly half an inch. The pleura on the upper surface of the



Dissection of the retro-peritoneal space showing the relations of the perinephric tissue and kidney to the diaphragm, colon, nerves and vessels. The ilio-hypogastric and ilio-inguinal nerves, and the lowest limit of the pleura, though posterior to the kidney, are indicated by lines, in order to show the relation.

diaphragm is therefore in proximity to the upper posterior perinephric region and readily becomes, from contiguity of structure, involved in the inflammation.<sup>1</sup> Careful auscultation will often reveal slight friction sounds and evidences of local pleuritis in the vicinity of the 11th or 12th rib when no *symptoms* of this complication are present. Serous effusion, empyema, or purulent expectoration from rupture of the abscess into the

<sup>1</sup> Plate VIII. of Dwight's *Frozen Sections of a Child*, shows this relation beautifully.

bronchial tubes may occur later. Abscess in the upper part of the kidney region may cause dyspnoea from the swelling of the infiltrated tissues preventing perfect descent of the diaphragm. This symptom may be induced whenever there is much swelling accompanying perinephritis, but it would evidently occur sooner and with less enlargement in inflammation of the upper areas.

The position of the supra-renal gland makes it liable to involvement when the upper anterior tract is the seat of disease, but we have not sufficient knowledge of the function of this organ to connect any definite symptoms with such supra-renal pressure or inflammation. The vicinity of the solar plexus and semilunar sympathetic ganglia to the upper anterior tract suggests that such digestive symptoms, as have been mentioned (p. 393) in connection with perinephritis, would especially occur when the upper anterior region was the seat of the abscess. Unfortunately the symptomatology of the sympathetic nervous system is at present too little understood to aid us much in our present researches. On the right side abscess of the upper anterior tract could, if there was considerable swelling, interfere with the return circulation in the vena cava, and thus induce dropsy of both lower extremities. Large swelling about any portion of the front of the right kidney might effect this, but the upper extremity of the kidney approaches rather nearer the vein than the lower, and therefore œdema of the legs would occur with less advance of the disease in this location. The right semilunar ganglion would not be likely to suffer from pressure until after the vena cava had been involved because it lies beneath and to the inner side of the vein.

I do not think that pressure upon the common bile-duct would readily occur in perinephritis of the right side, unless the swelling of the renal envelope was very great. If such interference to excretion of bile occurred, jaundice would be a marked symptom, and would locate the disease in the upper tracts of the right kidney. Similarly situated disease of great bulk might interfere with pancreatic excretion, causing fatty stools, or by making pressure on the vena portæ cause ascites. It does not seem to me probable that perinephric abscess would often interfere much with these structures because they lie near the middle line, and much more anterior than the kidney. This organ is placed in the hollow formed by the ribs and vertebræ, while the semilunar ganglia, the bile and pancreatic ducts, and the vena portæ lie in front of the vertebral bodies.

The symptoms liable to occur when the middle tracts are invaded are albuminuria, with perhaps tube-casts, due to renal congestion from pressure on the renal vein; and suprapubic, serotal or vulvar pain or anæsthesia on account of compression on the ilio-hypogastric and ilio-inguinal nerves. These symptoms are, I believe, less frequent when the abscess is in the anterior middle tract than in the posterior middle tract, because there is opportunity for the tumefaction to extend forward and relieve

the venous and nervous compression. Moreover, the nerves are too far behind to receive much pressure from anterior abscess. Hence if albuminuria and scrotal pain were present I should diagnosticate disease in the posterior middle tract; while if albuminuria existed without scrotal pain, neuralgia or anæsthesia, I should suspect anterior middle inflammation. Previous albuminuria must necessarily be excluded, to render the symptom of value in perinephric localization.

A higher degree of compression, particularly from posterior middle disease, would be liable to compress the pelvis and ureter, but symptoms of suppression of urine or uræmia would not be exhibited if the other kidney worked effectively. Actual inflammatory involvement of the pelvis or ureter would reasonably lead to the exhibition in the urine of pus in very moderate quantity.

Abseess in the anterior middle tract might cause scrotal œdema or even varicocele from obstruction to venous return in the spermatic vein. This would be more likely on the left side where the spermatic vein comes nearer the kidney by reason of emptying into the renal vein.

Perinephric inflammation about the lower portion of the kidney gives rise to an effect which is much more noticeable than any other consecutive symptom of perinephritis. This is flexion of the thigh due to spasm of the psoas and other flexors of the hip-joint on account of involvement of the anterior crural nerve. At the same time there may be anæsthesia or neuralgia of varying areas of the inner, anterior, or outer surfaces of the thigh from involvement of the sensory fibres of the genito-crural, external cutaneous, and anterior crural nerves. Retraction of the testicle will probably be present if the genito-crural nerve is implicated, because it supplies the cremaster muscle. This lifting of the testis indicates therefore a higher location of the abscess than when the hip-flexion exists without this accompaniment. A mere momentary retraction of the testicle which may arise from reflex irritation of various kinds is of no significance. Prolonged retraction would be the valuable symptom.

I believe the hip-flexion to be due to nerve compression rather than to a myositis of the psoas, because complete voluntary and passive extension is regained after recovery from the abscess, and also, in my opinion, after the pressure is relieved even before complete recovery. If inflammation of muscle existed I should expect a more or less permanent contracture. Pain at the knee may occur from pressure on the obturator nerve and possibly from similar involvement of the anterior crural which is also distributed to the knee. As these nerves both arise from the 3d and 4th and the branch from the 2d and 3d lumbar nerves, it does not matter by which one the pain is transmitted.

These symptoms I should expect to be developed earlier and more frequently in inflammatory exudations in the posterior than in the anterior lower tract. The reasons are that there is less room for expansive swell-



ing, and that all the nerves lie deeply under the psoas. The genito-crural and external cutaneous nerves come to the anterior and lateral surfaces of the psoas at distances from the kidney, varying in different subjects. The external cutaneous lying laterally is better protected than the genito-crural. Hence abscess in the anterior lower tract by extending downwards might involve these nerves in some cases when not extensive enough to do so in others. Posterior abscess as stated above, is of course much more liable to do so, and it can compress the nerves at a higher point, where they are still buried in the muscular mass of the psoas which lies beneath and to the inner side of the kidney.

Exudative inflammation at the lower part of the perinephric region may press upon the ilio-hypogastric and ilio-inguinal nerves, as in the middle tract, but at a lower point in the course of the nerves. In this event, however, the scrotal neuralgia and other symptoms due to such compression would not be accompanied by albuminuria from obstruction of the renal vein. In this instance, again, posterior disease, or at least disease at the lower extremity rather than in front of the kidney, would be most likely to give these resultant symptoms.

The duodenum lies behind the peritoncum, and crosses the spinal column at about the level of the lower anterior tract. Hence lesions in this tract on the right side might, by compressing this portion of intestine, cause obstruction, persistent vomiting, and rapid emaciation from non-assimilation. Abscess of the anterior middle tract could, perhaps, cause similar pressure.

In all cases it must be recollected that the right kidney usually lies about three-quarters of an inch lower than the left.

By burrowing of pus downwards symptoms of perityphlitis may be developed secondarily, and cause unilateral oedema from pressure on the external iliac vein. Abscess and sinus in the region of Poupart's ligament may be symptoms of perinephritis of the lower tracts. Anterior lower abscess of the left side is liable to produce constipation from pressure upon the descending colon, which, as shown in the cut from one of my dissections, is attached by the mesocolon over the lower half of the kidney. This is not so on the right side, where the ascending colon becomes free from the posterior wall just as it touches the inferior extremity of the kidney region, or perhaps extends upon and is fastened to only the very lowest part of its anterior surface.

It is barely possible that a large abscess of the right anterior lower tract might extend forward to the front of the spine, and compress the chyle reservoir, which lies in front of the second lumbar vertebra and to the right side and partly behind the aorta. The aorta would render such complication from the left perinephritis more difficult of consummation. Rapid emaciation would be expected as a result of such an unusual and quite unlikely complication.

I shall, in concluding this section of my subject, group in tabular form the more important deductions from my anatomico-clinical study.

*A Table of the Symptoms of Probable and Possible Value in Localizing Perinephritis and Perinephric Abscess.*

*All anterior regions.*—Pain, tenderness, swelling, œdema, and pointing in front and side of abdomen.

*All posterior regions.*—Pain, tenderness, swelling, œdema, and pointing in loin.

*Upper tracts.*—Pleuritic friction, pleural effusion, empyema, expectoration of pus; dyspnœa; suprarenal involvement; solar plexus involvement. (On right side.) Bilateral œdema of legs; jaundice; fatty stools; persistent vomiting; rapid emaciation; ascites.

*Middle tracts.*—Albuminuria and casts; suprapubic, scrotal, or vulvar pain or anæsthesia; suppression of urine; uræmia; pus in the urine; œdema of scrotum or varicocele (especially on left side).

*Lower tracts.*—Flexion of hip; pain or anæsthesia of front, inside, or outside of thigh; retraction of testicle; pain at knee; scrotal or vulvar pain or anæsthesia, without accompanying albuminuria; unilateral œdema of legs; abscess or sinus near Poupart's ligament; constipation (if left side); involvement of chyle receptacle (if right side).

In deciding upon the point of operation, after a diagnosis of the locality of the abscess has been made, the surgeon must bear in mind the relation of the kidney to the bony landmarks. The upper border of the organ corresponds very nearly with the space between the eleventh and twelfth dorsal spines. The lower extremity of the kidney is about on the level of the third lumbar spine. The vessels and pelvis of the kidney correspond with the level of the first lumbar spine. The right kidney lies a little lower than the left. The eleventh rib marks with considerable accuracy the upper edge of the kidneys. The right kidney has its top nearly on a level with the lower border of that rib, while the left has its upper end about on a level with the upper margin of the same rib. The kidney is about two inches wide, and lies with its inner border quite close to the vertebral bodies.

*Prognosis.*—A few cases of perinephritis recover without going on to suppuration. The percentage of such results is not obtainable. Gibney gives a good many such instances, of which one was of six months' duration. When suppuration occurs the prognosis is good if early evacuation is accomplished spontaneously or by the surgeon's incision. When the pus is allowed to burrow, prolonged suffering, hectic fever, and often death are the consequence. A fatal issue is certain under such circumstances,

unless the pus is finally discharged through some opening. Incision, of course, greatly hastens recovery.

*Treatment.*—During the early stages, counter-irritation to the loin by iodine and blisters may be employed. The frequent application of the hot-water douche has apparently been beneficial. Morphia, and similar remedies, and laxatives will usually be required.

When resolution does not take place, and there are evidences of a deeply seated posterior abscess forming, the proper treatment is early incision in the loin over the kidney. When the skin and deep fascia have been incised, the muscles, which may or may not be softened, can usually be torn through with the finger. By boring with the finger to the depth of two or three inches the surgeon will probably strike the pus cavity. If not, the free opening thus made will allow an early evacuation of the pus which will soon find its way to the wound. The finger is a better instrument than the knife, because the tearing apart causes little bleeding, and the finger can appreciate the direction of the pus by the friability of the muscles. If preferred by the operator, a grooved director may be pushed into the tissues, and a pair of dressing forceps slipped along this into the softened structures. By separating the blades, and withdrawing the forceps with the blades apart the surgeon can tear open the abscess without much risk of hemorrhage.

Anterior abscesses may be aspirated or incised from the lateral or anterior aspect of the abdomen. When small, their treatment will be greatly complicated by the relation of the peritoneum and intestines. Poland has tabulated,<sup>1</sup> chiefly, but not entirely, from Trousseau and Bowditch, 28 cases of perinephric abscess which he considers primitive; that is, not due to pyelitis, calculous nephritis, or like causes. Of these, in 8 cases no operation was done; in 5, more or less satisfactory attempts at operative evacuation were made by puncture with the trocar and canula, or by applying caustic potassa; and in 15, free incision was adopted. Death took place in 6 of the 8 cases left to nature's efforts, in 1 of the second group, and in 1 of the 15 cases treated by incision.

Bowditch, in 1870, especially insisted upon early incision. The reasons for such surgical action are at the present day so patent and so universally accepted that it is unnecessary to dwell upon the point.

After incision, free drainage, antiseptic affusions and poultices are proper.

<sup>1</sup> British and Foreign Medico-Chirurgical Review, 1871, vol. ii. p. 235.

## ARTICLE VII.

A CASE IN WHICH DIVISION OF THE FEMUR BELOW THE TROCHANTERS WAS PERFORMED SIMULTANEOUSLY ON BOTH SIDES FOR ANGULAR ANKYLOSIS OF THE HIP-JOINTS FOLLOWING COXALGIA. By JOS. C. HUTCHISON, M.D., L.L.D., of Brooklyn, N. Y.<sup>1</sup>

ONE of the most important achievements in the surgery of deformities made in recent times is that of subcutaneous division of the neck of the thigh-bone, for distortion of the hip-joint, by Mr. W. Adams, of London, and the modifications of his operation by Mr. Gant and the late Mr. Maunder. The success which has attended the operation, both here and abroad, has established it as a legitimate surgical procedure.

Mr. Adams says that the cases most favourable for his operation are those of a rheumatic or pyæmic origin.

“Because in these affections there is no loss of bone-structure, and the head and neck preserve their integrity; but in the so-called strumous class—unfortunately much the longest—there is generally more or less destruction of the head of the bone, and other alterations in the anatomical relations of the joint; only the most favourable of this class should therefore be selected; but for the remaining cases in which my operation is not applicable, Mr. Gant’s operation will be found to succeed.”

Mr. Adams draws the skin to one side and enters a tenotomy knife just above the top of the great trochanter, and carrying it straight down to the neck of the thigh-bone, divides the muscles, and opens the capsular ligament freely. Withdrawing the knife, the skin still being held to one side to keep the track straight, a saw rather more than a quarter of an inch in width, with a cutting edge an inch and a half in length, at the end of a blunt shank three inches in length, is carried along the track made by the knife, straight down to the bone, which is sawed through from before backwards.

Mr. Gant’s operation consists in dividing the shaft of the femur subcutaneously, just below the small trochanter, with instruments similar to those employed by Mr. Adams. It is applicable to the cases referred to by Mr. Adams, where his operation would be inapplicable, as in ankylosis following hip-joint disease, where the head and neck of the bone has disappeared, and in ankylosis resulting from rheumatic arthritis attended with large nodular deposits of new bone around the neck, making it difficult, if not impossible, to divide the bone in this situation. Infratrochanteric osteotomy has the additional advantage that the psoas and iliacus muscles are released, and the malposition of the limb is completely overcome.

Mr. Maunder’s operation is in the same situation as Mr. Gant’s, and is applicable to similar cases; but he divided the bone with Volkmann’s

<sup>1</sup> Read before the New York Surgical Society.

chisel, and probably did not make a subcutaneous section of the bone. Each operation has its appropriate sphere. Section of the neck of the bone (Adams's operation) should be selected where the pathological conditions permit it, because being nearest the centre of motion, the formation of a movable joint here allows more freedom in the movements of the limb.

Maunder's operation was selected in the case I am about to describe, because section of the neck of the bone was inadmissible on account of the altered state of the parts. The object of the operation was merely to straighten the limbs. I divided the bone with Macewen's osteotome, which I find is a better instrument than the chisel, and preferable to the saw, because it lacerates the soft parts less and divides the bone much quicker.

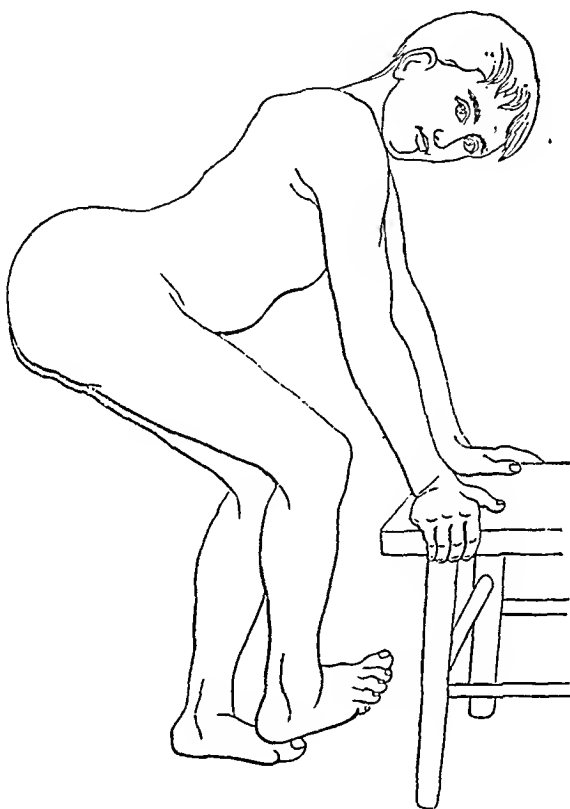
CASE.—J. C. A., aged 13 years, entered the Brooklyn City Hospital, November 11, 1881, for the relief of complete ankylosis, with angular deformity, of both hip-joints.

When three and a half years old, he fell upon the right trochanter, but experienced no inconvenience from it at the time. Six weeks subsequently, he began to complain of pain in his right knee, growing worse at night, and to drag his right foot in walking, which he did by leaning upon chairs and tables. An apparatus of some kind was applied, which enabled him to walk better, and his pain was less; but owing to the inconvenience and discomfort it gave him, crutches were substituted. Abscesses subsequently formed about the hip-joint, and he was confined to bed. A year and a half after the right hip became affected, the same trouble began in the left, without any history of injury. For a year subsequently he was confined to bed. Numerous abscesses formed around the joints, and a good many pieces of bone were discharged from both sides. The right side was always the worst. He improved, and moved about the house on his hands and knees for a year or two, and then used crutches and again went to school.

When he came under my observation he had entirely recovered from the morbus coxarius, and entered the hospital to be treated for the resulting deformity. His mother died with phthisis, and several other members of the family were victims of the same disease. When he entered the hospital his general health seemed to be good, but his aspect was not that of a vigorous boy. There was very marked lordosis in the lumbar region, which was completely removable when he sat down, showing a greatly increased flexibility of the spine. The lordosis also disappeared when he was on his back, and both thighs were brought up nearly to a right angle with the spine. The right thigh was a little more flexed than the left; both were adducted; the right was rotated inwards, and the right knee overlapped the left. The right heel rested upon the toes of the left foot, and the left shoe was worn by the pressure of the left foot upon it. The left knee-joint was normal; the right could be fully flexed, but owing to contraction of the flexor muscles, it could not be fully extended. Not the slightest flexion, adduction or abduction, could be made in either hip-joint; the entire body could be raised from the bed by merely raising one or the other heel, without developing the least motion at the hips. There were old scars behind both trochanters and at the left sacro-iliac junction, mark-

ing the openings of former abscesses. The top of the left trochanter major was one and a quarter inches and that of the right three-quarters of an inch above Nélaton's line. Distance from the anterior superior spine of the ilium to the lower border of the patella, on the right side, twelve and a half inches; on the left, thirteen inches. He moved about the ward in a crouching attitude, leaning on chairs and tables, and was able to go out of doors with the aid of crutches. His attitude is shown in Fig. 1.

Fig. 1.



November 11, 1881, I performed osteotomy on both sides below the trochanter minor, in the following manner, using Macewen's osteotome for dividing the bone:—

The patient was etherized, and turned upon his left side, and a bag filled with wet sand, as suggested by Macewen, was placed between the upper part of the thighs to form a firm resisting surface, in which the right thigh was imbedded. A longitudinal incision half an inch in length was made directly to the bone, just below the trochanter minor. The osteotome was slipped by the side of the scalpel until it reached the bone; the scalpel was then withdrawn, and the osteotome turned transversely in the direction required for the osseous incision. By a few strokes with a mallet the bone was penetrated to the hard layer on its inner aspect, which was notched by the osteotome and then snapped. During the operation the wound was constantly irrigated by squeezing from a sponge a solution of carbolic acid, one drachm to the quart. The thigh was brought down to

a straight position and was freely moved in all directions, while a carbolized sponge was applied to the wound; but in order to fully overcome the adduction and internal rotation, it was necessary to divide subcutaneously the tensor vagina femoris, pectineus, and adductor longus. The wounds were dressed with Lister's protective, dipped in the above solution of carbolic acid, and covered with marine lint and a bandage. The wound made for the chisel was not closed, but blood was effused between its lips, and formed clots which subsequently became organized.

The left femur was divided in the same manner, and the same dressing was applied; the left adductor longus and pectineus were also divided. There was very little hemorrhage from the incisions. The contracted right knee was forcibly extended, and the limbs were brought into a straight position. The divided ends of the bones were placed in apposition, but there was some angular inclination forward, especially on the right side, where flexion had been most marked.

The patient was put to bed, and extension made on both sides by weight and pulley—seven pounds for three weeks and four pounds for two weeks longer. Firm union had then taken place on the left side, but there was slight motion at the point of section of the bone on the right side. He was kept in bed a week longer. During the extension, the feet were separated eighteen inches, and were prevented from rotating inwards by sand-bags applied along the inner side, extending upwards to the lower third of the thigh.

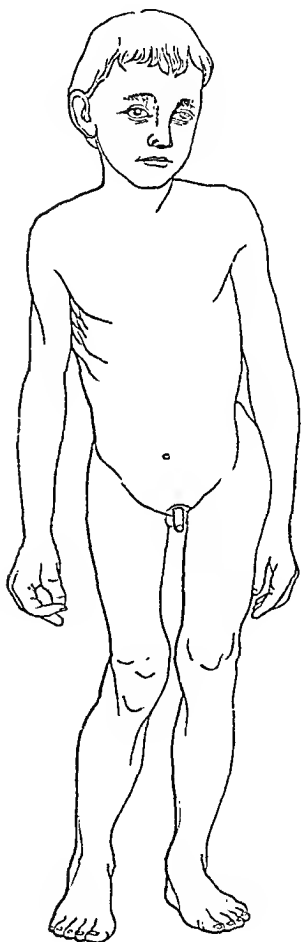
No reaction occurred. The temperature did not at any time rise above  $99^{\circ}$ , and he had no pain except when the limbs were moved. Two weeks after the operation the wounds were examined, and found to be entirely healed—covered with epidermis.

He was discharged from the hospital January 6, 1882, and his condition at that time is shown in Fig. 2.

The lordosis continues, but is slightly less marked than before the operation. There is some obliquity of the pelvis towards the right side. The lower extremities are straight, or nearly so; the thighs are slightly adducted, especially the right. He often uses a cane, but can get about very well without it. There is no motion at the hip-joints nor at the seat of the osteotomy, but there is considerable increase of mobility in the lower lumbar and sacro-vertebral joints. In walking on a level and in stepping downstairs, he puts his right

foot forward. In going upstairs he turns his left side forward and steps up with his left foot first; this is due to the fact that the pelvis is higher on the left side. His mother says that he plays ball and engages in other outdoor sports, and manages to run pretty well.

Fig. 2.



I desire to call special attention to the fact that, in this case, the osteotomies were made by open wounds directly to the bone; it was not intended to make them subcutaneous. The osteotome was introduced and placed transversely across the bone in order to divide it, and consequently the external air was admitted directly to the interior of the bone. In eight sections of the femur which I have made, three were done with a rigid observance of Mr. Lister's antiseptic method, including the spray, and five with a modified Listerism, which consisted, as in the above case, of irrigating the wound with a weak solution of carbolic acid, one part to two hundred and fifty, during the operation, and then covering it with a piece of protective wetted with the solution, and over this a piece of marine lint, retained in position by a bandage.

This case has a certain amount of interest, from the fact that it is the only case, so far as I am informed, where osteotomy of the upper part of the thigh-bone has been done upon both sides simultaneously. The operation commends itself to the surgeon on account both of its simplicity and safety. The external wound behaves as well and heals as readily as a simple tenotomy; indeed, I have seen more local disturbance from an ordinary tenotomy than occurred in any of the eight osteotomies that I have performed on the femur.

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#### ARTICLE VIII.

THE USE OF IODINE AS A STOMACHIC SEDATIVE. By THOMAS T. GAUNT, M.D., of New York.

THE employment of iodine for the relief of the vomiting of pregnancy has been somewhat in vogue for a number of years. And while the success attending its use has been pointed out with more or less enthusiasm by a number of observers,<sup>1</sup> its exact value has never been established, and so far as I have been able to ascertain, it is more often employed in actual practice, as a *dernier resort*, than as a remedy of much promise.

Some three years ago I began using small doses of the compound tincture of iodine as a stomachic sedative, and have gotten such satisfaction from its employment, that I have thought the appended cases might prove of possible interest to those in the medical profession who seek for more

<sup>1</sup> Eulenberg, *Med. Times and Gazette*, Nov. 1856, p. 527. Becquerel and Buisson, *Bull. de Thérap.* liii. p. 474. Masson, *Abeille Méd.* xiv. p. 268. Quoted by Stillé, *Therap. and Materia Medica*, 1860, vol. ii. p. 903. The National Dispensatory, Stillé and Maisch, 1879, p. 779. *Treatise on Therapeutics*, Trousseau and Pidoux, translation by Lincoln, 1880, vol. i. p. 158. Bartholow, *Materia Medica and Therapeutics*, 1878, p. 179.



reliable means of controlling persistent vomiting than the routine measures usually employed for the relief of this most distressing symptom. So far as I have been able to discover from a careful review of most of the standard works, iodine has not been put upon record as of value for relieving other forms of vomiting than that of the pregnant state.

The first occasion on which I used iodine as a stomachic sedative was in the following case.

CASE I. A woman, aged 50 years, had been suffering for two hours from severe vomiting which accompanied an acute indigestion. I ordered her three drops of the compound tincture of iodine, in a tablespoonful of water, every fifteen minutes until relieved. After taking the second dose the vomiting ceased, and before fifteen minutes more she was sleeping soundly. The following morning she awoke without the slightest feeling of nausea and was able to eat a hearty breakfast with relish.

I was so favourably impressed with the action of the remedy in this case that I decided to give it a further trial. The next suitable case which presented an opportunity for investigating its value, was the following.

CASE II. A woman, aged 43 years, had been suffering for a number of weeks from irregular rigors followed by a variable rise of temperature and profuse sweating. Annoying as these symptoms were, she considered them trifling when compared with the constant nausea and frequent vomiting from which she also suffered, and for the relief of which I saw her in consultation. We were at the time unable to make a diagnosis as to her general condition, but later, from the subsequent history, concluded that she was suffering from acute general miliary tuberculosis. Faithful efforts had been made to control the vomiting, both by a variety of drugs, and by so arranging her diet as might best conserve for the relief of this distressing symptom, which was depriving the patient of both food and sleep. I advised that she should be given five drops of the compound tincture of iodine every four hours. This was done, and in less than thirty-six hours she was relieved of both nausea and vomiting.

Following up these cases, in which iodine had given good results, I began to give this remedy in a large number of cases of vomiting from a great variety of causes. For example, I have used iodine in doses of from one to five drops, frequently administered, for the vomiting of phthisis. During the past year I have employed it over fifty times, and find it to give better results than any other remedy that I have seen used for this purpose. The following case is a fair example of the satisfaction which may be had from the use of small doses of iodine for relieving phthisical vomiting.

CASE III. A woman, aged 28 years, who had catarrhal phthisis which had advanced to the stage of excavation, had, for three weeks before I saw her, been suffering from almost constant vomiting, having been unable to retain even the simplest nourishment during this time, in consequence of which she had grown very anæmic, emaciated rapidly, and her other general symptoms had become much aggravated. I ordered her to have two drops of the compound tincture of iodine every fifteen minutes

until relieved. In less than two hours after taking the first dose the vomiting had ceased, and when I saw her again, at the end of one week, she was eating fairly well, was able to be about with comfort, and was withal better than she had been for a number of weeks previously.

This rapid checking of emesis, in a class of cases usually so difficult to control, is a fair example of the power possessed by iodine in checking vomiting, and it is easy to infer therefrom the comfort afforded patients, and the satisfaction one gets from the use of this drug in the vomiting of phthisis. In fact I have found iodine, in small doses, to exercise such a particularly salutary influence over phthisical vomiting, that I wish to record my belief that we have in it the most generally useful agent at our command for controlling this very distressing and obstinate symptom.

I have been able to check the annoying vomiting sometimes seen in hysteria, by drop doses of the compound tincture of iodine, as is shown in the following case.

CASE IV. A woman, aged 35 years, who had been subject occasionally to attacks of hysteria about the menstrual epoch. Two months previous to the present attack she had vomited for three weeks, commencing with the menstrual flow, and ending two weeks before the next period. During this time she had been confined to bed, and given various remedies without relief. She finally recovered after all medication had been discontinued. Six weeks after this, she again began to menstruate, and shortly after to vomit profusely. I gave her two drops of the compound tincture of iodine every one half hour, from which she said she experienced great relief, and in less than forty-eight hours she ceased vomiting completely.

We all know that conclusions based on the use of drugs in hysterical women are, as a rule, fallacious, and I only cite this as one out of several cases of hysterical vomiting in which iodine has afforded me much satisfaction.

The morning nausea and vomiting of drunkards, as well as the more persistent emesis, from which they often suffer after a prolonged debauch, have, in my experience, yielded more readily to small doses of iodine, than to any of the somewhat lengthy list from which selection is usually made.

CASE V. A man aged 45 years, who had been a hard drinker all his life, always after a prolonged indulgence suffered from annoying vomiting for several days. He consulted me while suffering from an attack of unusual severity. By giving him three drops of the compound tincture of iodine every hour, I was able to quickly stop his vomiting, and at the end of twenty-four hours he was feeling so well that he began again to drink as freely as before.

The foregoing is the last one of a long series of similar cases, and I cite it not as a striking illustration, but, because it has come under my care while writing this.

The vomiting we so frequently meet with in severe cases of septicæmia is very harassing to the patient, and renders the prognosis so much more

grave, that it behooves us to check it as quickly as possible. I have had several cases of septicæmia under my charge during the past few months, and have been greatly pleased with the control which small, frequently repeated doses of iodine seemed to exert over the symptom.

The results in the following case were particularly gratifying.

CASE VI. A woman aged 30 years; I was asked to take charge of this patient immediately after she had been operated on, and had her under my care for two weeks. The patient was suffering from phthisis and had been jaundiced for six months before the operation was done. The operation consisted in a resection of the right ankle. The details of the case have no interest for us here; suffice it to say, that, notwithstanding careful antiseptic treatment of the wound, the woman developed marked signs of septic poisoning, and before the end of a week had a temperature of 105°, and was rejecting everything swallowed. After trying to establish a tolerance of the stomach by a regulated diet and failing, I gave her one drop of the compound tincture of iodine every fifteen minutes. In less than six hours I was able to control the vomiting, and by means of an occasional dose of iodine kept the irritability of the stomach perfectly in check. At the end of the following week I delivered up the patient eating and sleeping well, with a temperature but slightly elevated and the wound doing finely.

I feel confident, that had it not been for the iodine which checked the vomiting, the patient would have been shortly reduced to a condition of extreme prostration. For judging by a large number of cases of septicæmia which I have seen, we can have but slight hope of checking the vomiting from the use of the routine anti-emetic remedies.

In the latter stages of chronic nephritis, where we so often encounter troublesome attacks of vomiting, I have used small doses of iodine with good success. The benefit obtained is often lasting, but I now and again came across a case where the administration of iodine has to be kept up for a considerable time, and later used whenever nausea and vomiting again supervene.

CASE VII. A man aged 55 years, has chronic diffuse nephritis, and is suffering from almost constant nausea and vomiting. Gave him two drops of the compound tincture of iodine every four hours. This checked the vomiting and relieved the nausea. By taking an occasional dose of iodine whenever vomiting threatened he was able to keep the irritability of his stomach in abeyance.

It would appear at first sight a doubtful expedient to give iodine in even comparatively small doses to patients with acute catarrhal gastritis. I have often given it in this condition, however, with the best satisfaction, as the following case may serve to illustrate.

CASE VIII. Man, aged 50 years, suffering from acute catarrhal gastritis. When I saw him he was having free, but somewhat painful emesis. I gave him one drop of the compound tincture of iodine every fifteen minutes, and had the pleasure of seeing the vomiting stop after he had taken three or four doses of the medicine.

But I do not intend to give examples of all the classes of cases in which I have used iodine as a stomachic sedative, for did I attempt this, I should be obliged to far exceed the limits I have proposed for this paper.

I will conclude with some half-dozen cases, chosen at random from a series of over one hundred cases of gastro-intestinal disturbance accompanied with vomiting which I have treated at the New York Dispensary, during the past summer, with drop doses of the compound tincture of iodine. The first case I will mention is one of gastritis with the following history.

CASE IX. Child, aged 5 years, had been suffering from great pain in epigastrium and constant vomiting, with marked increase of temperature, for forty-eight hours before I saw him. The pain and vomiting had deprived the patient of rest, and together with the increased temperature and impossibility of retaining food, or even water, had caused him to emaciate rapidly. He was greatly prostrated when I was first called to see him. I ordered him one drop of the compound tincture of iodine every fifteen minutes, and instructed the mother to allow him a few drops of a mixture of equal parts milk and lime-water, as soon as his stomach showed a tolerance of the iodine. At the end of two hours the medicine was retained, as was also the milk which was given in small but increasing quantities, and at frequent intervals. This child went on to rapid convalescence, and had no return of the vomiting after it was at first checked by the iodine.

The three following cases may serve to illustrate the results obtained from the use of iodine in some of the intestinal diseases of children.

CASE X. A child 1 year old, suffering from subacute duodenitis, was brought to me after the pain and pyrexia had nearly disappeared. The jaundice was still pronounced and the bowels quite relaxed. The child was greatly exhausted from the frequent and profuse vomiting which still persisted in spite of treatment by the usual remedies. I gave this child one-half drop of the compound tincture of iodine every one-half hour, and by this means speedily and permanently arrested the vomiting, after which the child took an abundance of nourishment and was soon restored to perfect health.

CASE XI. Child, aged 6 months, was suffering from acute gastro-enteritis, and because of inability to retain either food or medicine, was being rapidly undone by persistent emesis and diarrhœa. The child could be with difficulty roused, and would reject everything it could be induced to swallow. One-half drop doses of the compound tincture of iodine every one-half hour, in less than four hours arrested the vomiting, while, now that medicine could be retained, the diarrhœa was soon checked by appropriate treatment.

CASE XII. Child, 2 months old, was suffering from entero-colitis. Had been vomiting with but slight let up for five days. The contents of the bowels were passed involuntarily, and the exhaustion was extreme. The child was with difficulty roused, and, after rejecting one drop of the compound tincture of iodine every fifteen minutes for two hours, it finally retained the medicine, and at the end of another hour retained, without difficulty, a few drops of brandy and a mixture of milk and lime-water. These were increased while the frequency of administering the iodine was

diminished, and under the somewhat active stimulation and free administration of food speedily served to arouse the child's flagging strength. Appropriate treatment soon controlled the diarrhoea, now that medicine was retained, and the child was soon rapidly advancing toward recovery.

The following and final case of this series was the most serious case of cholera infantum which it has been my misfortune to encounter.

CASE XIII. Female child, aged 13 months, was brought to me in a state of collapse. It had been treated by a very skilful and successful practitioner before I saw it, but without avail. Stimulation or medication was impracticable because of the obstinate irritability of the stomach. Food had not been retained since the onset of the disease. I had it aroused somewhat by the application of heat to the surface of the body, and then gave it one-half drop of the compound tincture of iodine every fifteen minutes. At the end of two hours, brandy, together with lime-water and milk, were given in small quantities every five minutes and rapidly run up, the iodine and heat to the surface being continued. The child rallied rapidly and made a speedy recovery.

I treated in all some five hundred cases of gastro-intestinal troubles, during the past summer, and did not lose a single case. My treatment did not differ from that employed by a majority of my friends, excepting in the employment of iodine when vomiting threatened, and in the rigorous enforcement of what some neglect to make a cardinal necessity, namely, that in all the summer disturbances of children, all the milk should be boiled just before it is taken and diluted with one-half of its bulk of lime-water or less, according to the severity of the case. I make no apology for being thus explicit and detailed in mentioning what we all know theoretically so well, but which many neglect to practise at the bed-side as it should be practised.

I would say in conclusion, that I have yet found no satisfactory physiological explanation for the undoubted influence iodine in small, frequently repeated doses exercises over the symptom of vomiting. I do not doubt that anyone who will use iodine as I have pointed out, will be better satisfied with its action than they could possibly be with any of the conjectures which have presented themselves to my mind, as to its probable mode of operation.

I have, while writing this, heard of two cases in which the exhibition of iodine failed to check vomiting. They occurred in the practice of friends of mine, and were somewhat alike, at least, in two particulars. Both patients had been given ipecac. in small doses, before vomiting appeared, and in both, also, there was a large amount of mucus present in the stomach. The first was a case of vomiting following an overdose of opium, while the second was one of subacute catarrhal gastritis, in which the vomiting accompanied an acute attack of indigestion. Now it is not impossible that iodine may be incapable of exerting its influence, as an anti-emetic, when its administration follows that of ipecac.; this, how-

ever, is mere conjecture. There is one suggestion, however, I would like to make with reference to these two failures, and that is this, whenever iodine fails to afford relief, before abandoning it, let the patient have a free mustard potion, and when the stomach is cleansed by the vomiting which follows, then again exhibit the iodine, for we can easily imagine what a barrier to absorption is presented by the tenacious mucus which, in most morbid conditions of the stomach, thickly coats its lining membrane. It is well, also, to bear in mind the power possessed by starch in annulling the action of iodine. I must say, that by duly regarding these facts, during my quite extensive employment of the drug, I have not met with a single failure, in my own practice, from the use of iodine to control vomiting. I do not doubt, however, that I may, sooner or later, meet with instances in which this drug may prove impotent to relieve. In the event of my encountering a severe case of vomiting, in which there was present in the stomach an excess of mucus, and where the administration of an emetic, followed by the exhibition of iodine, failed to afford relief; I would not hesitate to pass the tube of a stomach-pump, wash out the stomach with an alkaline solution, and when the mucous membrane was thus thoroughly cleansed, I believe iodine, given in somewhat larger doses than already recommended, would afford excellent results.

In nasal catarrh, we are careful to cleanse the Schneiderian membrane before applying astringent solutions; why not, as well, that of the stomach, which we desire to place in as favourable an attitude for absorption as is possible? We can use this expedient without apprehension of harm resulting, in even the most severe cases, if we are sure that the strength of the stomach-wall is not impaired. The recent experiments, in France and elsewhere, with the forced feeding of phthisical patients, show how well so harsh a proceeding as the passage of a stomach-tube is borne, by even the most irritable stomach.

I prefer the following form for administration :—

R. Tincturæ iodinii compositæ, ℥ viij—℥ss.  
 Bismuthi subnitratiss, ℥j—℥j.  
 Glycérinæ,  
 Aquæ cinnamomi, āā ℥iij.  
 Liquoris calcis, ad ℥ij.

M. et Sig.—Dose, one dessertspoonful.

The mixture is to be well shaken up before being taken. Give a dessertspoonful every fifteen minutes until the vomiting ceases. It may be objected that the bismuth and lime-water are the active ingredients in this formula. That this is not true, any one may prove to his own satisfaction, by studying the effect of the compound tincture of iodine, when given in drop doses dissolved in pure water. I find, how-

ever, that by using the above combination, the bismuth and lime-water help to allay the irritability of the stomach, and when they are given in conjunction with iodine, I think that the effects of the latter are more lasting, while the nausea is certainly controlled more quickly. Should intestinal disturbance also exist, the bismuth of course is still further advantageous. This prescription needs to be prepared anew every day, as the free iodine combines with the lime to form the iodide of calcium, on standing twelve hours.

Or, what will be found more convenient, have the above formula put up but omit the iodine, which is to be kept in a separate bottle, and the requisite amount dropped in the desertspoonful immediately before administration.

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#### ARTICLE IX.

GASTROSTOMY, ŒSOPHAGOSTOMY, AND INTERNAL ŒSOPHAGOTOMY IN THE TREATMENT OF STRICTURE OF THE ŒSOPHAGUS. By MORELL MACKENZIE, M.D. Lond., Senior Physician to the (London) Throat Hospital, and Lecturer on Diseases of the Throat at the London Hospital Medical College.

OWING to circumstances which it is unnecessary to analyze here, operations on the internal organs of the body have become much more common than they were formerly, and in recent years the stomach has been very frequently operated on with the view of counteracting the effects of œsophageal obstruction. It will probably appear to many that the time has now come when the various methods may conveniently be described, and their relative merits and drawbacks compared. The three operations which we have to consider are gastrostomy, œsophagostomy, and internal œsophagotomy.

Gastrostomy has been the most frequently practised, and will probably be proved to be the most valuable of all the operations for the relief of œsophageal stricture.

*History of the Operation.*—Gastrotomy, for the extraction of foreign bodies, has been practised since the sixteenth century, but gastrostomy, or the establishment of a “mouth” in the stomach, for the purpose of feeding a patient who is unable to swallow, was first proposed and fully described by Egeberg,<sup>1</sup> a Norwegian surgeon, in 1837. It was, however, actually carried out for the first time in France by Sédillot,<sup>2</sup> in 1849. After him it was performed by Fenger, Cooper, Forster, Sydney Jones, Curling, Bryant, Van Thaden, myself, Troup, Durham, Fox, Maury, Low, MacCormac, Jouon, Smith, Clark, Mason, Jackson, Rose, Möller,

<sup>1</sup> Memoir read before the Med. Soc. of Christiania, May 8, 1837.

<sup>2</sup> Gazette Médicale de Strasbourg, 1849, p. 366.

Jacobi, Hjort, Küster, Tay, Heath, Verneuil, Callender, Schönborn, Lancelongue, Courvoisier, Trendelenburg, Le Dentu, Riesel, Messenger Bradley, Studsgaard, Langenbuch, and Langton. The details of all the operations performed by these surgeons may be found in an elaborate treatise published by H. Petit<sup>1</sup> in 1879. Since the appearance of that work cases have been reported by McCarthy,<sup>2</sup> Littlewood,<sup>3</sup> Pye-Smith,<sup>4</sup> McGill,<sup>5</sup> Morris,<sup>6</sup> Buchanan,<sup>7</sup> Escher,<sup>8</sup> Milner Moore,<sup>9</sup> Lücke,<sup>10</sup> Gritti,<sup>11</sup> Kroenlein,<sup>12</sup> Bryant,<sup>13</sup> Langton,<sup>14</sup> Golding-Bird,<sup>15</sup> Reeves,<sup>16</sup> Kappeler,<sup>17</sup> Anders,<sup>18</sup> Fowler,<sup>19</sup> Bugantz,<sup>20</sup> Elias,<sup>21</sup> Maydl,<sup>22</sup> and Hume.<sup>23</sup> Several cases have been operated on by Howse and Davies-Colley, but the details have not been published.

The following is the best mode of operative procedure: The patient having been placed on his back, and an anæsthetic having been administered, the surgeon should first try to map out by careful percussion the situation of the stomach. The area of stomach-resonance varies somewhat in different individuals, and also in the same person according to the condition of the viscus itself. In those who have been suffering for some time from partial starvation, the organ is apt to be retracted so as to be altogether covered by the inferior margin of the thorax. To obviate any difficulty from this source the stomach has sometimes been successfully inflated with air before the operation, or ether has been pumped into the viscus from the mouth, or gas has been generated within the organ itself by the administration, first of hydrochloric or tartaric acid, and shortly afterwards of bicarbonate of soda.<sup>24</sup> When the stricture is not

<sup>1</sup> *Traité de la Gastrostomie*, Paris, 1879.

<sup>2</sup> *Ibid.*, 1879, vol. ii. p. 406.

<sup>3</sup> *Lancet*, 1879, vol. i. p. 475.

<sup>4</sup> *Trans. Inter. Cong.*, 1881, p. 450 et seq.

<sup>5</sup> *Ibid.*, 1881, vol. ii. p. 942.

<sup>6</sup> *Ibid.*, 1881, vol. ii. p. 873.

<sup>7</sup> *Ibid.*, 1881, vol. i. p. 7.

<sup>8</sup> *Centralblatt f. Chirurgie*, Leipzig, 1880, vii. p. 625.

<sup>9</sup> *Lancet*, 1879, vol. ii. p. 425.

<sup>10</sup> *Med. Times and Gaz.*, 1880, vol. ii. p. 187.

<sup>11</sup> *Gazzetta Med. Ital. Lombardia*, 1881, serie viii. t. iii. p. 3.

<sup>12</sup> *Centralblatt f. Chirurgie*, 1881, p. 16.

<sup>13</sup> *Lancet*, 1881, vol. i. p. 572.

<sup>14</sup> *Brit. Med. Journ.*, July 15, 1882.

<sup>15</sup> *Clin. Soc. Trans.*, vol. xv. 1882, p. 33 et seq.

<sup>16</sup> *Ibid.*, p. 26.

<sup>17</sup> *Deutsche Zeitschrift f. Chirurgie*, Bd. xvii. Heft 1 and 2, 1882.

<sup>18</sup> *St. Petersburg Med. Wochenschr.*, 1882, xvii. p. 185 et seq.

<sup>19</sup> *Ann. Anat. and Surg.*, Brooklyn, New York, 1882, vi. p. 27 et seq.

<sup>20</sup> Quoted by Maydl, *Wien. Med. Blätter*, 1882, No. 22, p. 682.

<sup>21</sup> *Deutsche Med. Wochenschr.*, Berlin, 1880, vi. p. 329-333.

<sup>22</sup> *Wien. Med. Blätter*, 1882, Nos. 15, 16, 17, 18, 19, 21, 22, 23, and 24. Twelve cases are here reported by Maydl, but the actual operator in six of them was Albert.

<sup>23</sup> *Lancet*, Dec. 23, 1882, p. 1074.

<sup>24</sup> Schönborn (*Archiv. von Langenbeek*, vol. xxii. p. 500) fitted an India-rubber ball to the end of a fine hollow sound, which he passed down the gullet. When the ball was in the stomach, it was inflated by blowing down the tube. Felizet (*Lancet*, Oct. 7, 1882), in a case in which he had lately to open the stomach for the removal of a foreign body, passed a small India-rubber tube through one of the patient's nostrils into the



impermeable, any of these plans may be of service, but none of them are necessary.

Gastrostomy should always be done with the strictest antiseptic precautions. There are three stages in the operation: 1, to open the abdominal parietes; 2, to transfix the stomach and secure it to the edges of the wound in the abdomen, and to the integument; and, 3, to open the stomach. Between the second and third stages it is most important that some days should elapse.

*1st Stage.* An incision should be made through the skin for a distance of two or three inches parallel to the left costal margins and about one finger's-breadth to their inner side; the centre of the incision being made to fall about three-quarters of an inch internal to the outer edge of the rectus. The lips of the skin wound should then be held asunder, and the fibres of the rectus should be divided in a vertical direction for about an inch, all hemorrhage being at once checked by torsion of the vessels, or ligature with fine carbolized catgut. When the parietal peritoneum is reached, it should be gently picked up with forceps, and a minute opening should be made in it with the knife. Through this aperture a grooved director should be introduced, on which the membrane is to be slit up in the axis of the incision through the rectus. The peritoneal sac being thus laid open, the stomach will in most cases be at once visible, but sometimes instead of it the omentum, or even the colon comes into view. The former is not likely to mislead the operator, but as it has actually happened that the colon has been opened instead of the stomach, it is well to be on guard against such an accident. The longitudinal bands, together with the *appendices epiploicæ*, and the thinness of the walls will serve to identify the colon, which should be gently pushed downwards out of the way. Should the omentum present itself in the wound, gentle traction should be made until the stomach is brought down so as to bulge out somewhat like a hernia.<sup>1</sup>

stomach. The proximal extremity of the tube was connected, by means of a piece of tubing, with a recipient containing ether. When the patient was fully under chloroform, the ether-holder was plunged into a vessel of water, at a temperature of 60° Centigrade, when the stomach at once became distended by the vapour. It is obvious that neither this nor Schönborn's plan could be pursued if the gullet was much narrowed. Jacobl (New York Med. Journ., 1874, vol. xx. p. 142) passed a fine catheter into the stomach, and injected a solution of bicarbonate of soda, and shortly afterwards a solution of tartaric acid. Fowler (Annals of Anat. and Surgery, Brooklyn, 1882, vol. vi. p. 27) injected thirty drops of dilute hydrochloric acid, mixed with an ounce of water, followed, after an interval of from two to three minutes, by an ounce of a saturated solution of bicarbonate of soda.

<sup>1</sup> Some surgeons prefer to make a vertical incision along the outer margin of the left *linea semilunaris*, commencing immediately below the edge of the thorax, and continued downwards for three or four inches. The incision through the rectus, as recommended above, was first practised by Mr. Howse, to whom the greater success of gastrostomy in recent years is largely due. The straight fibres of the rectus form a sphincter round the gastric wound, and the dribbling of the contents of the stomach so prone to occur during coughing is thereby prevented.

*2d Stage.* To keep the stomach in a proper position and prevent its falling back into the abdominal cavity during the remaining steps of the operation, the base of the projecting portion should be transfixed in a direction parallel to the surface of the belly by two long needles, the extremities of which should reach considerably beyond the edges of the wound on either side.<sup>1</sup> The stomach is thus held fast between two transverse supports resting on the surface of the body. The viscus should now be stitched to the abdominal wall either by a single or a double series of sutures. Verneuil uses one set of stitches, the sutures, which are of silver wire, being passed first through the skin close to the edge of the wound, next through the parietal peritoneum, lastly through the peritoneal and muscular coats of the stomach, and out again; the ends are then threaded through a perforated plate, and afterwards through shot drilled with a hole for the purpose, when they are fixed by crushing the leaden ball over them with pincers. Howse, on the other hand, prefers a double circle of stitches; the outer, which consists of carbolized silk sutures, passes through the serous and muscular tunics of the stomach, and afterwards through the skin about three-quarters of an inch beyond the lip of the wound, and is here tied over pieces of quill; the inner circle is made with ordinary sutures of fine wire or carbolized silk, and unites the serous coat of the viscus to the skin close to the edge of the incision. The object of the two circles of stitches is to provide a greater area for adhesion, the whole of the zone between the two circles being likely to unite with the abdominal parietes.

*3d Stage.* It is most important to delay this till adhesions have been produced between the corresponding peritoneal surfaces round the wound, and the stomach thereby securely fixed to the abdominal wall. Mr. Howse's method is to defer the third step of the operation till the fifth or sixth day, and by some surgeons<sup>2</sup> an interval of a week or even a fortnight is allowed to elapse between the preliminary part and the completion of gastrostomy. The stomach may be opened by puncturing the centre of the exposed portion with a fine-pointed bistoury. As considerable hemorrhage has followed this apparently simple proceeding on more than one occasion, the surgeon should be prepared for such a contingency, the occurrence of which is probably favoured by the congested condition of the islet of stomach-wall included within the ring of sutures. Pressure will probably suffice to stop the bleeding, or the risk may be altogether avoided by opening the stomach with a thermo-cautery point, after the manner of Albert. An India-rubber tube, provided with a plug, may be left in the wound, and kept *in situ* by means of a silver suture, passing through it and the skin on each side, or, as is Mr. Howse's practice, the

<sup>1</sup> This plan was first recommended by Verneuil (Bull. de l'Acad. de Méd., 1876, p. 1025).

<sup>2</sup> Maydl, loc. cit. No. 15, gives two cases where the interval was fourteen days.

fistulous opening, which is at first made only large enough to take a No. 6 catheter, may be gradually dilated to the size of a No. 32 instrument (French seale). In either case the wound should be dressed with a pad of lint steeped in carbolized oil (1 in 60), and an additional pad of boracic lint, the whole being kept in place by means of a body-bandage. The sutures should not be removed for about ten days.

In the interval between the second and third stages of gastrostomy the patient's strength should, if possible, be maintained by rectal alimentation. If the patient, however, has suffered from aphagia for more than two or three days, it may be necessary to do the entire operation in one act.

A few words must be added regarding the manner of feeding the patient after the completion of the operation, as the success of gastrostomy greatly depends on this. Nourishment should be given in small quantities and at very frequent intervals, and during the first few hours it should be given cold or even iced, in order to check vomiting. The act of feeding should, in as far as possible, be an imitation of the natural mode of taking food, that is to say, nourishment should be given in small spoonfuls, about half a minute being allowed to intervene between the helpings. The cause of failure after gastrostomy has undoubtedly sometimes been the unphysiological mode in which the food has been administered. At first the diet should be confined to milk, beef-tea, and a little stimulant; later on, when the stomach has become more accustomed to the novel conditions under which it has to work, light puddings of tapioca or arrowroot, hot milk sweetened with sugar, eggs boiled very soft, beef-téa, and chicken-broth may be allowed. Pounded meat or panada may be given when the patient's power of digestion is established. Trendelenburg<sup>1</sup> advises that the patient should, if possible, masticate the food, and should then blow it through an elastic tube passing from his mouth to the permanent tube in the gastric fistula. The patient has thus the enjoyment of eating, and the digestive process has the advantage of the salivary function.

Many operators have noticed that after gastrostomy the œsophageal stricture yields a little; this is probably due to relaxation of the muscular spasm, and subsidence of the inflammation which almost invariably affects the mucous membrane near the seat of the disease. Hence a day or two after the establishment of the gastric fistula, a little liquid food can often be swallowed. In this way the feeding through the stomach may be minimized at first, and that organ gradually habituated to the abnormal method of receiving nutriment.

The operation has been done sixty-seven times for cancer of the gullet, twelve times for cicatricial stricture, and twice for syphilitic stenosis. In a series of seventy-six cases of gastrostomy of which I have been able

<sup>1</sup> Archiv. von Langenbeck, 1878, vol. xxii. p. 227.

to obtain sufficient details, the total number of deaths occurring within a fortnight was fifty-five, *i. e.*, 72.4 per cent.

In the case of malignant disease the average duration of life after the stomach was opened was rather more than twenty days, the longest period of survival having been six months, and the shortest twelve hours. On looking more closely into the matter, however, it is plain that the results of this operation are progressively growing more favourable. Thus, in thirty-five cases collected by Pétit, and extending over a period of thirty years, the average survival of the patient after gastrostomy for œsophageal cancer was slightly more than fourteen days and a half, whilst in thirty-two cases in which the operation has been done for the relief of the same disease within the last three years, the average subsequent duration of life has been more than thirty days. This estimate does not include Howse's cases, which have been alluded to by several surgeons as amongst the most successful operations of the kind that have been performed. It should be added that in fifty-seven cases of which a sufficiently detailed account is given, the average duration of the symptoms at the time of the operation, was about six months and a half, the longest being three years, and the shortest six weeks.

In twelve cases in which gastrostomy has been done for cicatricial stricture, the average of after-life has been more than five months and a half, not including a case of Bryant's, where the result is simply indicated as "cure," without further details. In these cases the average duration of symptoms at the time of the operation had been rather more than five months, the longest period having been one year, and the shortest four weeks.

Lastly, in two cases in which this operation was done for syphilitic stenosis, the average survival was slightly over three days, whilst the average duration of the symptoms had been seven months and a half.

In a total number of eighty-one gastrostomies death from shock occurred within forty-eight hours in twenty-seven, *i. e.*, in 24.6 per cent.

The *advantages* of gastrostomy are:—

1st. That it can be carried out with comparative *ease*.

2dly. That there is very little *risk* in the steps of the operation itself, especially if done in two acts separated by a proper interval of time.

3dly. That there is almost entire certainty<sup>1</sup> of being able to effect the object aimed at, which is the establishment of an alimentary fistula altogether beyond the seat of stricture.

4thly. That the fistula is hidden from sight.

The only *disadvantage*, on the other hand, is that gastrostomy, with

<sup>1</sup> See, however, two cases reported by Maydl (*loc. cit.*) where the operator was foiled by finding in one a large growth in the stomach itself, and in the other a cancerous condition of the fundus and anterior wall of that organ in addition to the œsophageal disease.

every aid of antiseptic precautions in the actual performance of it, and the improved after-treatment which is now adopted, still yields a high percentage of deaths.

ŒSOPHAGOSTOMY is an operation about which much less is generally known. In dealing with the history of it, therefore, it will be desirable to give a short commentary on all the cases hitherto treated by this method.

*History of the Operation.*—The establishment of a fistulous opening in the neck for the relief of stricture of the œsophagus appears to have been first suggested by Stoffel.<sup>1</sup> The first recorded instance, however, in which the operation was performed is one briefly alluded to by Tarenget<sup>2</sup> in 1786. The operator's name has not been preserved, but the case was more successful than any of those which have been done since. The patient was a woman suffering from what would seem to have been cancer of the gullet, and in spite of the fact that the cervical and submaxillary glands were already enlarged at the time of the operation, she survived for a period of sixteen months, during which she was fed through the fistula. More than half a century later, Watson<sup>3</sup> published a case of what he calls tubercular stricture, in which he opened the gullet. The disease, however, was probably malignant, as there were no signs of tubercle in the lungs. The patient—a young man, aged twenty-four—lived two months after the operation, and died of œdema of the glottis, for which tracheotomy had to be done. The thyroid body was greatly enlarged, but does not appear to have pressed upon the gullet. Soon afterwards Lavacherie<sup>4</sup> operated on a man, aged sixty-eight, suffering from what was probably a cancerous stricture of the œsophagus. This case is of somewhat doubtful character, as the cutting operation appears to have been undertaken mainly, if not solely, for the extraction of an ivory tube which had been passed into the stricture and could not be withdrawn. The gullet was opened, and the patient was fed through a tube, but it is not clear whether this was introduced through the wound or through the mouth. The patient died on the fifteenth day. Œsophagostomy was successfully performed by Monod<sup>5</sup> on a woman suffering from cancerous stricture of the upper part of the food-channel. She survived the operation three months, and died from the inevitable progress of the disease. In 1853 Follin<sup>6</sup> published a monograph on stricture of the gullet, wherein he advocated œsophagostomy in suitable cases. Richet<sup>7</sup> states that he performed the operation for

<sup>1</sup> Bonet, *Sepulchretum*, Lugduni, 1700, lib. iii., sec. iv., obs. xx. p. 35.

<sup>2</sup> *Journ. de Méd.-Chir. et Phar.*, 1786, t. lxxviii. p. 250.

<sup>3</sup> *Dublin Journ. of the Med. Sciences*, 1845, vol. xxvii. p. 260.

<sup>4</sup> *Bull. de l'Acad. de Méd. Royale de Belgique*, 1845, t. iv. p. 758.

<sup>5</sup> Quoted by Follin, *Rétrécissements de l'Œsophage*, Paris, 1853, p. 116.

<sup>6</sup> *Ibid.*, p. 125.

<sup>7</sup> *Traité Prat. d'Anat. Méd.-Chir.*, 2e éd., 1860, p. 508.

impermeable narrowing of the gullet opposite the second dorsal vertebra; the canal was opened, and a sound passed through the stricture and left *in situ*. Unfortunately, no further details are given, either as to the result of the case or the nature of the disease. In 1859, Bruns<sup>1</sup> reported the case of a man, aged thirty-eight, suffering from dysphagia, on whom he operated. The patient lived ten days, and, after death, the cause of the complaint was found to be compression of the œsophagus by an enlarged thyroid. A somewhat similar case was related by the same surgeon<sup>2</sup> in 1865. The patient was a man, aged thirty-seven, who had been afflicted with difficulty of swallowing for a year; œsophagostomy was done, and the man died five weeks later. In this case, as in Watson's above related, death was due to pulmonary disease and to œdema of the larynx, which made tracheotomy necessary. The thyroid was found to be somewhat enlarged, and a vast abscess with gangrenous walls was seen encircling the upper part of the gullet. Three years later, Willet<sup>3</sup> performed the operation on a woman, aged forty-seven, suffering from œsophageal carcinoma; the patient had begun to regain her strength when she refused to be fed, and died of exhaustion eighteen days after the establishment of the fistula. In 1868, Cheever,<sup>4</sup> in an interesting report of two cases of external œsophagotomy for foreign bodies, took occasion to make some remarks on the same proceeding when practised for stricture of the gullet, and two years later the whole subject was fully discussed by Terrier<sup>5</sup> in an elaborate and valuable monograph. In 1870 the operation was performed by Menzel<sup>6</sup> on a patient of Billroth's, a man, aged forty-four, suffering from cancerous stricture; death took place on the following day. Three years subsequently, Podrazki<sup>7</sup> performed œsophagostomy on a man, aged forty, who had suffered from well-marked syphilis; the patient died two days afterwards, and his disease, which, during life, had been supposed to be of venereal origin, was found to be purely carcinomatous. In 1875, Poinsoi<sup>8</sup> operated on a woman, aged fifty-five, whose œsophagus was obstructed by malignant growths; the patient expired twenty hours after the operation. In 1876,<sup>9</sup> I recorded a case in which œsophagostomy had been performed by Evans, nine years previously, on a woman, aged forty-three. The disease was malignant, and the patient died of collapse fifty hours after the operation. In the same year a case was related by Horsey,<sup>10</sup> in which he operated on a boy, aged five, who had swallowed some caustic

<sup>1</sup> Deutsche Klinik, 1859.

<sup>2</sup> Ibid., 1865, p. 37.

<sup>3</sup> St. Barth. Hosp. Rep., 1868, vol. iv. p. 204.

<sup>4</sup> Two Cases of Œsophagotomy, Boston, 1868, p. 61.

<sup>5</sup> De l'Œsophagotomie Externe, Thèse de Paris, 1870.

<sup>6</sup> Wien. Med. Wochenschr., 1870, No. 56, p. 1350 *et seq.*

<sup>7</sup> Ibid., 1873, Nos. 33, 35, 36.

<sup>8</sup> Reported by Bidau, De l'Œsophagotomie, Bordeaux, 1881, p. 19.

<sup>9</sup> Med. Times and Gaz., 1876, vol. ii. p. 137.

<sup>10</sup> Amer. Journ. of the Med. Sciences, new series, vol. lxxii., 1876, p. 114.

fluid; the gullet was unintentionally opened above the stricture, which was found to be quite impervious. The wound was therefore closed, and the little patient died of shock within twenty-two hours. In 1877, Kappeler<sup>1</sup> related two cases of œsophageal cancer, in which he made an opening into the gullet through the neck. In each instance the operation had been undertaken with a view to actual removal of the disease by excision, and it was only when this was found impracticable, owing to its extent and situation, that, as a desperate measure, œsophagostomy was tried. The first patient, a man, aged forty-two, died five days after the operation; whilst the other, a man of sixty-five, survived only forty-four hours. In the same year, Bryk<sup>2</sup> published a case in which he had performed œsophagostomy in a case of cicatricial stricture; the patient was alive seven weeks after the operation, but the ultimate result is not stated. Nicoladoni<sup>3</sup> also recorded a case in which he had recourse to œsophagostomy. The patient was a girl, aged four, who was suffering from cicatricial stricture of two years' standing; the gullet was incised above the point of narrowing, when it was found that the tube was dilated at its upper part. The little patient died in six days. An instance is related by Zenker,<sup>4</sup> where the operation was done on a boy, aged three years and a half, for cicatricial stricture. Death occurred within twenty-four hours. Simon is referred to by Kœnig<sup>5</sup> as having opened the œsophagus in a case of cancer, but no detail is given beyond the fact that the patient survived only thirty-four hours. Hadlich<sup>6</sup> operated in 1880 on a man, aged sixty, who was unable to swallow from some cause, the nature of which was not clearly established. The patient died thirteen months after the operation, but an autopsy was not permitted. In the same year Studsgaard<sup>7</sup> performed œsophagostomy on a woman, fifty-two years of age, suffering from cancerous stricture; she improved considerably after the operation, and died five months later from the natural progress of the disease. The same surgeon<sup>8</sup> operated quite recently on a girl, aged nine, who had swallowed nitric acid. Death took place eight days afterwards, owing to "hemorrhage from the internal jugular vein caused by septic ulceration." In 1880, œsophagostomy was also performed by Holmer,<sup>9</sup> of Copenhagen, on a man, aged fifty-seven, for cancer of the right tonsil and pharynx; the patient lived two months. In 1881, Annandale<sup>10</sup> related three cases in

<sup>1</sup> Deutsche Zeitschr. f. Chir., 1877, vol. vii. p. 381 *et seq.*

<sup>2</sup> Wien. Med. Wochenschr., 1877, Nos. 41 and 45.

<sup>3</sup> Ibid., No. 25.

<sup>4</sup> Ziemssen's Cyclopædia, vol. viii. p. 23.

<sup>5</sup> Krankheiten des Pharynx und Œsophagus, Stuttgart, 1880, p. 122.

<sup>6</sup> Deutsche Zeitschr. f. Chir.

<sup>7</sup> Hospitals Tidende, 2 R. vii. No. 43, Copenhagen, Oct. 27, 1880.

<sup>8</sup> Private letter from Dr. Studsgaard to the Author, dated Dec. 21, 1882.

<sup>9</sup> Hospitals Tidende, Copenhagen, 1882, No. 1.

<sup>10</sup> Liverpool Med.-Chir. Journ., No. 1, July, 1881, p. 14 *et seq.*

which he had performed the operation for cancerous stricture. In the first, the patient, a woman aged forty-two, survived three months, and finally died of septicæmia; in another, the patient, also a woman aged fifty-three, died in ten days. Unfortunately, no details are given of the third case, which is the more to be regretted, as it was one of exceptional interest, a second stricture having been encountered when the gullet had been opened below the first, and gastrostomy having, therefore, been found necessary. The operation has lately been practised by Timothy Holmes.<sup>1</sup> The patient was a man, about fifty years of age, who suffered from malignant stricture of the œsophagus; he died about three days after the operation. Reeves<sup>2</sup> has also recently performed œsophagostomy on a man, aged sixty-three, who died on the eighth day. To these cases should be added one in which Butlin<sup>3</sup> states that he witnessed an attempt at œsophagostomy which had to be abandoned owing to the wide extent of the disease, and another reported by Maydl,<sup>4</sup> in which it was found impossible to open the gullet in a case of cicatricial contraction, owing to the extreme hardness of the walls.<sup>5</sup>

The mode of performing œsophagostomy is as follows: The patient should be placed on his back with his shoulders somewhat raised, and his head turned toward the right side. An anæsthetic having been given, the surgeon, standing behind the patient's head, should make an incision through the skin on the left side from just above the sterno-clavicular articulation to about the level of the hyoid bone. The platysma should then be cut through, and if a vein of any size, such as the external or anterior jugular, is met with, it should be divided between two ligatures and turned aside. The superficial fascia should next be slit up on a grooved director along the line of the original incision, and the anterior edge of the sterno-mastoid laid bare. The patient's head should then be slightly raised, so as to relax the tissues of the neck, and an assistant should draw aside the sterno-mastoid with a retractor. The omohyoid (which can be recognized by its direction inwards and upwards) is now brought into view, and should be divided as near to its hyoid insertion as possible. The carotid sheath is next to be held aside together with the sterno-mastoid, whilst the trachea is drawn inwards by a second assistant. The connective tissue being torn through with the handle of the knife, the left lobe of the thyroid body should be raised and pushed towards the middle line, when the trachea will be fully exposed, together with the

<sup>1</sup> *Med. Times and Gaz.*, July 29, 1882, p. 117.

<sup>2</sup> Private letter from Mr. Reeves to the Author, dated July 20, 1882.

<sup>3</sup> *Sarcoma and Carcinoma*, London, 1882, p. 184.

<sup>4</sup> *Wien. Med. Blätter*, 1882, No. 17, p. 523.

<sup>5</sup> Professor Gross, in the most recent (1882) edition of his *Surgery*, refers (vol. ii. p. 495) to cases in which this operation has been practised by Paekard and Cohen. As I am unable to find any published details of either of these cases, they are not included in the above summary.



œsophagus behind it. It may sometimes be difficult to identify the latter tube, and it may be necessary, therefore, to pursue the dissection down to the pre-vertebral muscles. A sound<sup>1</sup> should now, if possible, be passed from the mouth through or into the stricture. By this means the operator will be guided to the situation of the gullet, which should be opened by a vertical incision  $2\frac{1}{2}$  to 5 centimetres long, through its lateral wall. In cases of cancerous stricture the opening should be made as far below the seat of disease as possible, whilst in cicatricial stenosis the knife may be carried through the contracted tissues. When the tube has been opened, a silk ligature should be passed through each edge of the œsophageal wound, and again through the corresponding lip of the cutaneous incision, and the gullet should be gently drawn towards the surface and loosely attached to the outer wound. A curved tube measuring about three inches in length below, and one above the bend, with a suitable shield at its upper extremity, should be introduced into the œsophagus through the wound, and fixed in position by means of tapes round the neck. Sutures may be used to bring the edges of the skin-wound together above and below the feeding-tube, should this appear desirable.

The food should, of course, be liquid, and in order to prevent it from soaking into the tissues of the neck, when the patient is to be fed, it is better to pass a second long inner tube some way down the gullet, through the shorter tube which is constantly worn. The nutritive fluid may either be injected with a syringe, or poured in through a glass funnel.

Œsophagostomy should never be performed unless there be good reason to believe that it will be possible to introduce a tube into the gullet below the seat of stricture.

On analyzing the recorded cases of œsophagostomy, it will be found that out of a total number of twenty-six cases, in which the operation was performed, sixteen, *i.e.* 61.5 per cent., died within a fortnight, whilst deaths from shock occurred in seven or 26.9 per cent. Œsophagostomy has been done seventeen times for the relief of cancerous stricture, four times for cicatricial contraction, three times for dysphagia caused by compression of the gullet from without, and twice for stenosis of somewhat doubtful character.<sup>2</sup> The longest duration of life after the operation in any of these cases was sixteen months; the shortest, eighteen hours.

In the malignant cases the average duration of life after the operation was rather more than fifty-two days. If, however, Tarenget's case, in which the patient lived sixteen months, be omitted from consideration as

<sup>1</sup> A special instrument was devised for this purpose by Vacca Berlinghieri (*Della Esofagotomia*, Pisa, 1820), consisting of a curved hollow sound widely fenestrated at one side to allow of the protrusion of a stylet which pushes the wall of the gullet outwards. An ordinary flexible bougie tipped with a metallic knob will, however, be found to answer just as well.

<sup>2</sup> Richet's case is too lacking in detail to be taken into account.

too vaguely reported and of too ancient date to be quite trustworthy, the average term of survival in the remaining fifteen instances was twenty-four days. In seven cases of œsophagostomy for cancer in which sufficiently full details are given for an estimate to be made, the average duration of the symptoms before the operation was six months, the longest being eleven months, and the shortest three months.

In the four cases in which œsophagostomy was done for cicatricial contraction, the average duration of life after the operation was nearly seven weeks. In three of the four, however, the patients were children, and in them the average was little more than two days and a half. This high mortality of the operation in the case of children utterly negatives the views of those who maintain that œsophagostomy does not cause much shock, and it points to the desirability of postponing the operation where practicable to a more advanced period of life.

In the three instances of dysphagia from compression, the average period of survival was five months, whilst in the two cases of doubtful nature it was nearly two months.

Death from the immediate shock of the operation took place in four of the cases of malignant obstruction and in two of the cases of cicatricial contraction. The statistics of this operation do not show the steadily progressive improvement which is seen in the case of gastrostomy.

The great *advantages* that are claimed<sup>1</sup> for œsophagostomy are :—

1st. That it is attended with comparatively little systemic shock.

2dly. That it facilitates subsequent dilatation of the stricture; in other words, it is so far curative that it may enable the patient's existence to be indefinitely prolonged.

The supposed absence of shock, however, is not borne out by the actual facts, seeing in five cases<sup>2</sup> death occurred within twenty-four hours after the operation, whilst in a sixth<sup>3</sup> the attempt to open the gullet had to be given up, owing to the collapsed condition of the patient. As regards the second alleged advantage, it does not appear that there is any case on record in which an œsophageal stricture has been successfully dilated through an opening in the neck.

The *disadvantages* of the operation are :—

1st. That owing to the depth from the surface at which the gullet is situated, and the fact that when diseased it is often fixed to the surrounding parts, the operation is a very difficult one. (To this should be added,

<sup>1</sup> Whilst Follin (*Rétrécissements de l'Œsophage*, pp. 125-6, Paris, 1853), Terrier (*De l'Œsophagotomie Externe*, p. 62 *et seq.*, Paris, 1870), Annandale (*Liverpool Med.-Chir. Journ.*, No. 1, July, 1881, p. 13), Bidau (*De l'Œsophagotomie*, p. 38 *et seq.*, Bordeaux, 1881), and T. Holmes (*Med. Times and Gaz.*, July 29, 1882, p. 118) give a moderate support to the operation, Mr. Reeves (*Trans. Clin. Soc.*, vol. xv., 1882, p. 29 *et seq.*) has come forward as an uncompromising champion of it.

<sup>2</sup> Menzel, Poinot, Kappeler, Horsey, Zenker.

<sup>3</sup> Maydl, *loc. cit.*

in cases of cicatricial stenosis, that the walls of the organ may be so tough as to make it difficult, or even impossible, to cut through them.)

2dly. That great *danger* inevitably attends a cutting operation carried out in immediate proximity to such important structures as the large bloodvessels and nerves of the neck, and the thyroid gland, which is not unfrequently enlarged in cases of œsophageal stenosis.

3dly. That there is great *uncertainty* in any given case whether the opening in the œsophagus can be made below the stricture. (Even when its upper limit can be made out with tolerable accuracy, the extent of the disease cannot even be guessed at, and if in an exceptionally favourable case the lower margin could be approximately ascertained, a second stricture may exist lower down.)

4thly. That a discharging fistula in the neck is a conspicuous disfigurement.

Comparing gastrostomy and œsophagostomy together, it may be affirmed—1st, that gastrostomy is both *easier* and *safer* to perform, the risk of hemorrhage and other surgical complications being much less; and, 2dly, that gastrostomy *always* meets the difficulty to be overcome—that is to say, the obstruction to the passage of food into the stomach—except in those comparatively rare cases in which the stomach itself is also diseased. The effect of either procedure in relieving the patient's immediate sufferings, notably from thirst, and occasionally, in a less degree, from hunger, is often very marked, and it might be expected that the disease would make less rapid progress when the gullet is no longer exposed to irritation by persistent endeavours to swallow. It cannot, however, be denied that the benefit of these operations has often been shown more in the euthanasia which they have brought about, than in any appreciable prolongation of the patient's life. In fact, judging from statistics alone, operative interference would seem to be attended with less satisfactory results than the milder palliative measures generally adopted. Thus, whilst the average duration of life in a series of 100 of my cases of malignant stricture of the gullet—in which no operation was attempted—was *eight* months, the average extent of life after the first manifestation of distinct symptoms till death in fifty-three cases in which gastrostomy was performed was *seven* months.<sup>1</sup> The records of œsophagostomy for cancer seem at first sight more favourable than either of the above estimates, for in eight

<sup>1</sup> It is right to state, however, that the recent records of this operation taken alone show much better results. Thus, in twenty cases reported since 1879, the average duration of life from the first onset of the disease was seven and a half months, notwithstanding that in one case the period of survival is only reckoned as four months, and in another as ten days, though the patients in each instance were still alive, and likely to live for some time, at the date of report. If the Albert-Maydl cases alone are considered, a still more favourable result will be found. The total average in seven cases was eleven and a half months, notwithstanding that one of the patients still living at the date of report is only counted as surviving the operation six weeks.

cases, of which sufficient details are given to form the basis of such a calculation, the average period from the first appearance of dysphagia till death was *ten* months. This result is, however, largely due to Podrazki's case being included; and it may be pointed out that the long duration of antecedent dysphagia in this instance furnishes no very certain measure of the length of time during which the *cancer* had existed, the patient having suffered severely from syphilis, and the difficulty of swallowing having at first yielded to anti-venereal remedies. Moreover, as the patient survived the operation only two days, it is obvious that the weight which the case apparently throws into the scale in favour of œsophagotomy is quite illusory. Podrazki's case may therefore be disregarded as being merely a disturbing element in the present calculation. The remaining seven cases of œsophagotomy for malignant disease show an average duration of life of only *seven* months after the first appearance of symptoms.

INTERNAL ŒSOPHAGOTOMY is an operation which, though it has *à priori* much to recommend it, is unfortunately very seldom applicable owing to the extent and character of œsophageal strictures.

*History of the Operation.*—To Maisonneuve<sup>1</sup> belongs the credit of first attempting to relieve cicatricial stricture of the gullet by internal incision. He operated on three cases, of which two died and one recovered. In the two fatal cases the patients were women, and succumbed to peritonitis. In a fourth case in which Maisonneuve attempted internal œsophagotomy the patient's death was due to a false passage which was made into the posterior mediastinum. Lannelongue<sup>2</sup> soon afterwards operated successfully. Dolbeau<sup>3</sup> performed the operation on two patients, both of whom appeared to be cured as long as they continued under observation. Trélat<sup>4</sup> had a good result from the procedure in spite of severe primary and secondary hemorrhage. Tillaux,<sup>5</sup> Studsgaard,<sup>6</sup> and Schilz<sup>7</sup> have each reported a successful case. The last-named surgeon was less fortunate in a second instance, in which the patient died from profuse hemorrhage.<sup>8</sup> Czerny<sup>9</sup> performed the operation on a child who died from periœsophageal cellulitis complicated by diphtheria. Recently cases have been treated after this method by myself and by Dr. Roc,<sup>10</sup> of Rochester, U. S., the particulars of which will be found below. Dr. Elsberg,<sup>11</sup> of New York, has also operated successfully in two cases.

<sup>1</sup> Clinique Chirurgicale, Paris, 1864, t. ii. p. 409.

<sup>2</sup> Mém. de la Soc. de Chir. de Paris, 1865, t. vi. p. 547.

<sup>3</sup> Gazette des Hôpitaux, 1870.

<sup>4</sup> Bull. Gén. de Thérap., 1870, t. lxxviii. p. 252.

<sup>5</sup> Bull. de Thérap., 1872, t. lxxxiv. p. 14.

<sup>6</sup> Canstatt's Jahresb., 1873, Bd. ii. p. 487; and 1875, Bd. ii. Abtheil ii. p. 297.

<sup>7</sup> Correspondenz-Blatt. d. Aertz. Verein. in Rheinland, April, 1877, No. 19, p. 19.

<sup>8</sup> Ibid.

<sup>9</sup> Beiträge zur Operat. Chirurg., 1878, p. 70.

<sup>10</sup> New York Med. Record, Nov. 11, 1882.

<sup>11</sup> Arch. of Laryngol., Jan. 1883.

The stricture has sometimes been divided from above downwards,<sup>1</sup> but this method is extremely dangerous, and should never be attempted. The incisions should always be made from below upwards. Special instruments have been devised for the purpose by Dolbeau,<sup>2</sup> Trélat,<sup>3</sup> and myself. My œsophagotome consists of a gum-elastic bougie, about fifteen inches long, terminating in a small metal cap about one inch in length, and of slightly larger calibre than the rest of the instrument. Through the interior of the bougie runs a wire, the lower end of which is attached to a small cutting blade, whilst its upper extremity is connected with a spiral spring. By pressing a metallic button at the top of the bougie, the knife is thrust out through a slit on one side of the metal cap. A little notch in the edge of the button corresponding to the slit guides the operator as to the position of the cutting blade. The use of my instrument is perfectly simple. It is introduced into the gullet with the blade concealed, and when the part containing the knife is felt to be below the stricture, the blade is to be made to protrude, and by a rapid upward movement to cut through the obstructing band. The only place where this division can be safely practised is at the posterior wall of the gullet, and there only in the upper three-fourths of the tube. A week after the operation a medium-sized bougie should be passed and instruments of gradually increasing calibre should subsequently be used from time to time.

From an examination of the results of the published cases, internal œsophagotomy does not appear to be a very satisfactory operation. Of the seventeen cases in which it has been practised, four died, *i. e.*, 23.5 per cent. This estimate includes only cases which proved fatal within fifteen days of the operation; the mortality would doubtless appear much higher if all the cases were counted in which death, though directly traceable to the operation, did not occur within the above-mentioned period. Thus, in my own case the patient died three months after the œsophageal stricture was divided, but the pulmonary inflammation, to which he ultimately succumbed, came on so soon after the operation that it is most probable there was a casual relation between the two events.

On analyzing the statistics more closely it will be found that the operation has been done eleven times for the relief of cicatricial stricture, twice for œsophageal stenosis of an indefinite nature, once for malignant, and once for tubercular disease. Of the remaining two cases I have no details beyond the fact recorded by the operator that they were successful. Of the cicatricial cases three, *i. e.* 27.28 per cent., died. This average, however, would be considerably reduced if each individual act of œsophagotomy were to be counted as a separate case, for the operation was performed six

<sup>1</sup> By Maisonneuve, Lannelongue, and Studsgaard.

<sup>2</sup> Bull. de la Soc. de Chir. de Paris, Mar. 16, 1870.

<sup>3</sup> Bull. de Thérapeutique, 1870, t. lxxviii. p. 252.

times on one of the patients, three times on another, and twice on a third. This would raise the total number of operations to nineteen, with a mortality of only 15.7 per cent. In the case of malignant disease intra-œsophageal section was practised five times, on each occasion with definite, though transient, benefit, and the patient finally died of phthisis. The patient with tubercular stricture died of peritonitis four days after the operation.

The *advantages* of internal œsophagotomy are :—

- 1st. That it is attended with an inconsiderable amount of shock.
- 2dly. That if the stricture can be thoroughly divided, gradual dilatation can be carried out and a cure thereby be effected.
- 3dly. That the procedure involves no external wound requiring constant attention and giving rise to disfigurement.

The *disadvantages* of internal œsophagotomy are :—

- 1st. That it can only be safely performed in cases where it is still possible to get a bougie through the stricture.
- 2dly. That owing to the formation of these structures, which often extend far down the gullet, it is difficult to get beyond all the points of obstruction. (It may be added that in many cases of cicatricial narrowing the obstructing ridges are vertical in direction, as in the second case detailed below, and therefore cannot be divided by any instrument.)
- 3dly. That in many cases the walls of the œsophagus are so much thickened that limited longitudinal incision does not relieve the obstruction.
- 4thly. That the actual danger attending the performance of the operation is far from inconsiderable. Indeed the thinness of the œsophageal walls, the close proximity of many vital organs, and the fact that in disease the gullet is often intimately adherent to the surrounding parts, constitute dangers which cannot be ignored. In one of the fatal cases, death was due to hemorrhage, and in one of the successful operations bleeding occurred to an alarming extent.

In the first of the two following cases of cicatricial stricture, internal œsophagotomy was performed; in the second, it was intended to do the operation, but circumstances prevented its being carried out. The important features in the case were that many of the obstructing ridges were *vertical* in direction, and could not have been divided by any œsophagotomy; and further, the great extent of the disease which would have made any operation, except gastrostomy, absolutely useless.

CASE 1. Henry A. drank a solution of potash on September 17, 1880, and in spite of immediate treatment at the London Hospital, his gullet became so much narrowed that thirteen weeks elapsed before he was able to swallow fish. The stricture was treated by gradual dilatation until February, 1881, when, owing to an attack of smallpox, the patient discontinued his attendance for four weeks. When seen again he could swallow nothing but jelly. He was admitted into the Hospital for Dis-

cases of the Throat, under my care, on April 7, 1881, being by that time in an extremely weak condition. The stricture was found to begin just below the level of the cricoid cartilage, the canal of the œsophagus at the affected part being very tortuous and deviating to the left side. Gradual dilatation rendered it possible to pass a No. 8 bougie by June 2, but more than a month later an advance of only one size had been made. On July 12, I performed internal œsophagotomy, dividing the stricture in the middle line behind from below upwards. A No. 14 bougie could then be passed without difficulty. The pain of the operation was slight, but in a few hours the patient began to feel some discomfort over the base of the right lung, and unmistakable signs of pneumonia soon afterwards showed themselves. Dilatation with bougies was resumed after a few days, and in August No. 15 could be passed easily. The patient was shown to the members of the International Congress on August 4, and at that time, whilst still suffering from some pulmonary trouble, his general condition was fairly satisfactory. He passed from my care a day or two afterwards, as the Throat Hospital had to be closed for the purpose of being rebuilt. He soon afterwards re-entered the London Hospital, and died in that institution about the middle of October, 1881. At the autopsy both lungs showed patches of pneumonia, and there was some purulent effusion in the right pleura. The gullet was found thickened to such an extent as to narrow considerably the calibre of the tube for three inches downwards from the level of the cricoid cartilage. The strictured portion was found to have been divided posteriorly for about an inch at the lower part.

CASE 2. Sarah C., aged twenty-six, swallowed hydrochloric acid on February 16, 1879. She was taken to Guy's Hospital, where the immediate symptoms were treated, but the dysphagia increased so much that on April 24 gastrostomy was performed by Mr. Howse. The patient was fed entirely through the artificial opening for nearly a year, when dilatation with bougies, which had been found impracticable at an earlier period, owing to the tightness of the stricture, was again attempted. By this means the patient recovered the power of swallowing to such a degree that Mr. Howse allowed the fistulous opening to close, warning the patient at the same time that it would be necessary to pass a bougie occasionally. She left Guy's Hospital in August, 1880, in consequence of some disagreement with the nursing authorities. On September 6, in the same year, she came under my care at the Throat Hospital. A No. 2 bougie was passed, and the stricture was gradually dilated till it was large enough to admit a No. 9, and the patient's condition improved considerably. In February, 1881, however, the dysphagia had again become so severe that she had to be taken into the Throat Hospital, where for three months she was confined to bed, suffering from constant pain between the shoulders, which was increased when she tried to swallow. During all this time her temperature was always above the normal point, being often as high as 102° Fahr. in the evening. No cause, however, could be discovered for the pyrexia. After this illness the patient steadily improved for some time, in spite of occasional relapses. In the autumn of 1882 her gullet again became almost blocked up, in spite of constant attempts at dilatation, and she gradually lost strength till the early part of November, when she died.

On *post-mortem* examination the body showed little sign of wasting, there being fully an inch of fat on the abdominal walls. Both lungs were adherent to the chest walls. The œsophagus was bound to the pre-verte-

bral muscles by bands of dense fibrous tissue, rendering its separation from the surrounding parts very difficult. Barely half an inch below the cricoid cartilage the stricture commenced, and extended downwards to within two centimetres and a half of the cardia. The walls of the gullet throughout the whole of the strictured portion were enormously thickened, the cut edge in some places being an eighth of an inch in width, and very tough. The narrowest part of the stricture corresponded to the upper inch and a half of the gullet, and consisted of four longitudinal ridges, mainly situated on the anterior wall, but partly on the sides of the gullet. These ridges almost completely blocked up the lumen of the œsophagus, which was still further narrowed at their lower end by a transverse cicatricial band connecting them together. Lower down the stricture was made up of a meshwork of bands, most of which had a transverse direction. Throughout the strictured portion of the gullet its walls were hard and thickened. Seven centimetres above the cardia there were three openings, admitting a large probe, surrounded by some cicatricial bands. These openings communicated with a canal, which ran for two centimetres and a half downwards, and slightly to the right between the muscular fibres, and terminated in a pouch covered with muscular fibres, half an inch long, external to the gullet. Higher up, at a point rather below the middle of the œsophagus, there was a minute perforation, leading into the trachea through its posterior wall. The stomach was  $6\frac{1}{4}$  inches in its smaller curvature and  $12\frac{1}{2}$  in its larger curvature. Its anterior surface measured  $3\frac{1}{2}$  inches in its widest part, and 2 inches in its narrowest part.

There was a cicatrix  $2\frac{1}{2}$  inches long in the abdominal wall, and on opening the stomach a depressed cicatrix, with radiating ridges, was seen about an inch and a half from the greater curvature and rather nearer the pylorus than the cardia. The stomach was united to the anterior wall of the abdomen by a dense fibrous tissue.

Dr. Roe, of Rochester, U. S., has lately reported two cases<sup>1</sup> in which he has successfully used my œsophagotome. One was that of a lady, aged twenty-four, on whom he twice operated for stricture of the gullet, making on the first occasion one posterior incision, and on the second two lateral cuts, after which dilatation with bougies could be satisfactorily carried out.

The patient in the other case was a boy, aged eight years, whose œsophagus was narrowed at its lower part through the action of a caustic fluid, to such a degree that even milk could scarcely be swallowed. Dr. Roe divided the stricture in six different places at intervals of a few days, and then practised dilatation with success.

On reviewing the whole subject, it appears to me that the conclusion plainly pointed to by the facts set forth in this article is that the three operations stand, as regards relative merit, in the order in which they have been described. Gastrostomy may now be said to have taken its place among the procedures of every-day surgery, and a hope may legitimately be entertained, that, as the increasing resources of science render earlier detection of œsophageal disease possible, the results of the opera-

<sup>1</sup> New York Med. Record, Nov. 11, 1882, pp. 536 and 538.



tion will be still more satisfactory in the future. The fatality of gastrostomy has, no doubt, been in great measure due to the fact that it has often been performed only at the eleventh hour, when the patient was almost moribund; "a species of refined cruelty reflecting no credit on surgery," to use the words of an authority venerated on both sides of the Atlantic.<sup>1</sup> Œsophagostomy has necessarily a much narrower range of usefulness; it is always more or less a "leap in the dark," and its effects may occasionally be brilliant; it is, after all, an operation more likely to find favour with the adventurous surgeon than with the careful practitioner. In cases of syphilitic origin, however, when the stricture is at the upper part of the gullet, œsophagostomy offers a very good prospect of success, as the disease is much more frequently *limited* in its extent than either cancer or the lesions produced by corrosive fluids. As regards internal œsophagotomy, increased experience will probably show, that, though its immediate results are not so frequently fatal, its ultimate effects, when successful, are less beneficial to the patient than those of either gastrostomy or œsophagostomy.

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#### ARTICLE X.

**RHABDOMYOMA OF THE PAROTID GLAND.** By T. MITCHELL PRUDDEN, M.D., Director of the Physiological and Pathological Laboratory of the Alumni Association of the College of Physicians and Surgeons, New York; Lecturer on Normal Histology in Yale Medical College.

THE interest and importance which have always attended the study of the rare and complex tumours called Rhabdomyoma, or Myoma striocellulare, won greatly in significance when their characters and occurrence were adduced by Cohnheim in support of the very suggestive theory of the embryonal origin of tumours.

The fact that tumours, composed wholly or in part of such a highly organized type of tissue as striated muscle, should be formed in organs like the kidney, testicle, etc., where such tissue does not properly belong, was entirely inexplicable on any of the earlier hypotheses concerning the etiology of tumours. If, however, it be assumed that, at some time during the process of differentiation of tissues and formation of organs in the embryo, some cell or cluster of superfluous cells should form and then cease to develop, or become misplaced in such a way that its further development is rendered for the time impossible, and should remain quiescent but still endowed with all the potentialities of embryonal cells, until at

<sup>1</sup> Gross, System of Surgery, 6th ed., 1882, vol. ii. p. 495.

some period of later life when the conditions favourable to its development might occur, the formation of such heterologous tumours would be no longer enigmatical, and their life history would be in conformity to the general laws of tissue growth and development.

While the adoption of this hypothesis rendered comprehensible the occurrence of a large majority of the heterologous tumours, it found in the rhabdomyomata a most striking illustration, from the fact that they occurred—and occurred apparently exclusively—in connection with the genito-urinary system—that is, in a series of organs whose development involves such unusually complex changes during their evolution as might well favour the occurrence of such slight irregularities in growth and malpositions of minute clusters of cells as this hypothesis postulates.

It is the purpose of this paper to record a new case of an heterologous rhabdomyoma, which presents some unique and significant features both in structure and position.

The writer is indebted for the epitomized clinical history of the case to Dr. E. T. Weed, House Surgeon to the Roosevelt Hospital, N. Y.

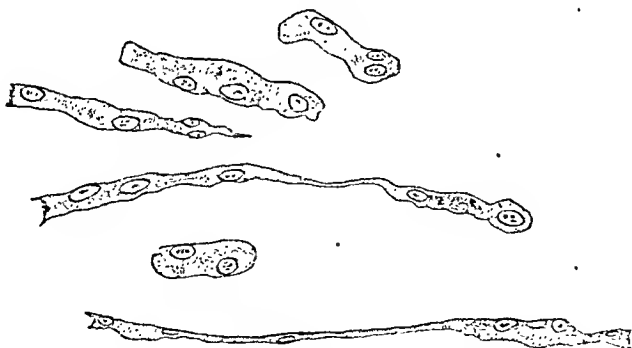
C. B., a healthy lad, seven years of age, observed a swelling on the right side of the face, which was found to depend upon the existence of a small tumour situated near the angle of the jaw. It gradually increased in size, being painful, especially at night, and at last the swelling opened, discharging several pieces of bone. Healing then occurred, and the part remained in a quiescent condition for some time. Patient was admitted to hospital about twelve months after the first appearance of the tumour, with considerable swelling of the right lower half of face. During the operation at the seat of lesion, dead bone was discovered on the outer surface of the ramus of the jaw. A moderately firm ovoidal tumour, about the size of a pigeon's egg, was found occupying the position of the parotid gland, which was not seen as a separate structure. The dead bone and tumour being removed, a partial facial paralysis of the right side resulted, but the wound healed well, and the patient was discharged cured about eight weeks after the operation.

The examination of the tumour by the writer gave the following results: The tumour, measuring about 5.7 cm. by 3.8 cm. by 3.2 cm., is in general lobulated, and consists of two portions, firmly united, and merging without sharp demarcation into one another. About two-thirds of the tumour is quite firm in texture, surrounded by a thin, distinct capsule of connective tissue, and upon transverse section shows, irregularly scattered through the mass, tiny spheroidal or occasionally elongated bodies, somewhat lighter in colour than the surrounding tissue, and sharply outlined against it. These bodies resemble greatly in appearance the glomeruli of the spleen. The remaining third of the tumour is distinctly lobulated, soft, and has the general appearance of the parotid gland. The above-described spheroidal bodies are most abundant near the zone of junction of the harder and softer portions of the tumour, but they are present throughout the mass, and in general each thin section of one cm. square shows from eight to twelve of them.

Upon microscopical examination, the smaller, softer portion of the

tumour presents the structure of normal parotid gland. The remainder of the tumour consists largely of connective tissue, for the most part dense, but in some places loose in texture. Embedded in this, and quite uniformly distributed, are fascicles or lobular masses, consisting of striated muscle fibres in various stages of development, and surrounded by loose connective tissue. These lobules of muscle tissue are abundantly supplied with bloodvessels, and many of them contain numerous small spheroidal cells similar in appearance to leucocytes. These lobules of muscle tissue make up about one-fourth of the entire bulk of the tumour. The most fully developed of the muscle fibres vary greatly in diameter, ranging between 0.035 and 0.005 mm. They are entirely without a sarcolemma, elongated nuclei being irregularly and scantily distributed along their sides, and they are grouped in an exceedingly irregular manner, twisting and curling and crossing one another. Both transverse and longitudinal striations are clearly defined, but Krause's and Hensen's lines are only occasionally faintly visible. Thickly scattered among these more fully developed muscle fibres, in most of the lobules, are numerous large, finely granular, spheroidal, ovoidal, and broadly fusiform cells, ranging in the shortest diameter from 0.01 to 0.02 mm., and having small, mostly peripherally placed, nuclei. These cells are in many cases closely clustered along the walls of the bloodvessels, from the proliferation of whose peripheral cells they appear to originate. The bodies of these cells are deeply stained by eosin, assuming the same tint as the more fully developed muscle fibres. Between these ovoidal or elongated simply granular cells with peripheral nuclei and the incompletely developed but distinctly striated muscle fibres, all intermediate forms are found in close contiguity. The elongated cells appear at first to lie in rows, and then to form a nodulated longer or shorter cord, upon which, here and there, in many cases, the first faint indications of transverse striations may be seen. Fig. 1 shows some of these intermediate forms.

Fig. 1.



The small whitish bodies, above mentioned, vary in diameter from 0.2 to 1.0 mm. They are situated sometimes within the lobules of muscle fibres, and sometimes in the connective tissue between the latter. They appear to be invariably associated with small arteries, surrounding them or lying close at one side. In some sections which were suitably cut, a branching artery could be seen, upon whose larger and smaller divisions

these bodies were grouped in a manner similar to the arrangement of the glomeruli in the spleen, but much closer together. The structure of these bodies differs. The smaller ones consist simply of a collection of small spheroidal or polyhedral cells, closely packed together, without demonstrable intercellular substance, and closely surrounding a small artery, the whole being sharply outlined against the surrounding tissue. Such a structure is represented in Fig. 2. Then there are somewhat larger bodies

Fig. 2.

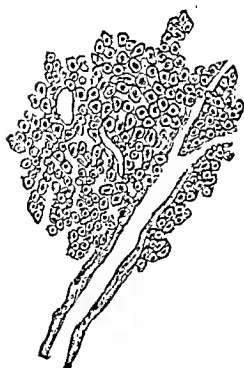
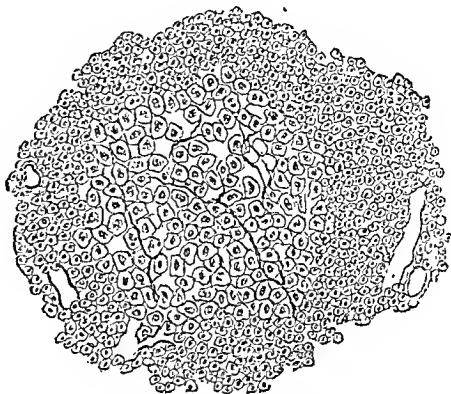


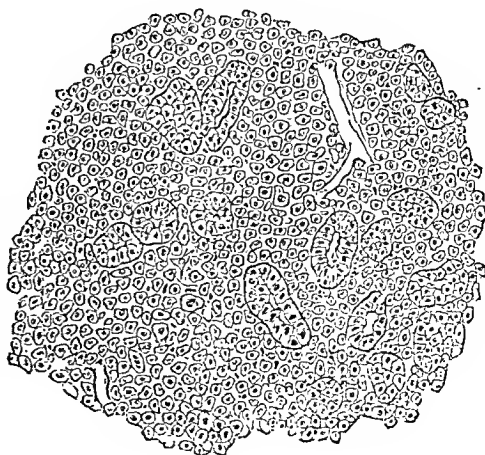
Fig. 3.



which have the same general appearance, but which have a well-marked underlying reticulum of fine anastomosing fibres. The meshes of this reticulum are filled with cells: those near the periphery being small, spheroidal, or slightly polyhedral, resembling leucocytes, and very closely packed together; while the central meshes are occupied by larger polyhedral cells with large nuclei. These structures are usually well supplied with capillary bloodvessels, Fig. 3.

Then still another variety of these bodies is seen, especially near the junction of the tumour proper with the parotid gland, having the same general appearance to the naked eye and bearing the same relation to the bloodvessels. They have a delicate underlying reticulum, whose meshes are filled with cells similar to those occupying the central portions of the last described bodies. But scattered here and there within them, sometimes few in number and again very abundant, are seen tubular structures having a thin membrana propria and lined with cylindrical or cuboidal or polyhedral cells. Those lined with cylindrical and cuboidal cells have usually a well-defined lumen, while those lined with poly-

Fig. 4.



hedral cells usually have none. The peripheral zone of small cells is usually absent in the bodies showing these rudimentary ducts (Fig. 4).

Approaching the zone which lies between the parotid and the hard part of the tumour, the spheroidal bodies are seen to contain more and more well-defined glandular structure, excretory ducts, and normal alveoli. Often on one side of the body the structure exactly resembles that of a well-formed small lobulus of the parotid gland, while the other is occupied entirely by a mass of spheroidal cells. On the other hand, in this border-zone isolated bodies are seen resembling a well-formed lobulus of the parotid, with a sharply defined spheroidal mass of indifferentiated cells occupying the place of a small group of alveoli. Thus, between the small spheroidal bodies formed simply of a circumscribed collection of small cells around a bloodvessel, and a well-formed lobule of the parotid gland, all intermediate forms may be found, some of the more typical of which are described and figured above.

The arteries in the tumour present in a most typical form, in many cases, the lesions of obliterating endarteritis. Numerous larger and smaller nerves are irregularly distributed through the tumour.

The tumour, then, intimately connected with and involving the parotid gland, presents the usual peculiarities of structure of the rhabdomyomata. In addition to this, it contains structures which the writer feels justified in considering as atypical rudimentary lobules of the parotid gland—atypical not only in structure and development, but in their distribution through and association with the incompletely developed muscular tissue.

It will be seen, also, from the above description, that while the whole tumour is lobulated, the lobules differ in a striking way in different parts: in one part are the lobules of the normal parotid; in another the lobules are composed in part of gland-structure and in part of the above-described peculiar nodular masses of cells; in still a third portion these cell-masses occupy a part of the lobules of muscle tissue; and lastly there are lobules containing only muscular and connective tissue. The distribution of the arteries is similar throughout; small trunks are given off from the main arteries, which rapidly divide into short, thick branches, each system of which is distributed to portions of the tumour forming the lobules.

Although, as far as the writer is aware, the genuine heterologous rhabdomyomata have hitherto been found only in connection with the genito-urinary organs, and have thus seemed especially significant in the light of the hypothesis of the embryonal origin of tumours, yet the situation of this tumour is none the less calculated to lend weight to this hypothesis; for in the first place, like most of those hitherto described, it is a complex tumour; and secondly, its situation near the seat of the embryonal gill-clefts would suggest the possibility of the occurrence of irregularities in development not less important than those associated with the organs derived from the Wolffian bodies. Indeed, the parotid gland, as is well known, is a favourite field for the development of complex forms of tumours.

Without purposing to give a complete bibliography, it seems appropriate to append a list of the publications which are most closely connected with the theme of the present paper.

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#### ARTICLE XI.

LEPROSY IN THE HAWAIIAN ISLANDS. Extract from the Report of  
J. R. TRYON, A.M., M.D., Surgeon U. S. Navy.

THE interesting group in the North Pacific Ocean composing the Hawaiian Islands are Oahu, Hawaii, Maui, Molokai, Kauai, Niihau, Lanai, Kahoolawe (uninhabited), and four barren rocks, Molokini, Lehua, Kaula, and Nihoa, or Bird Island, and all situated in latitude  $18^{\circ}$  to  $23^{\circ}$  north, and in longitude  $155^{\circ}$  to  $161^{\circ}$  west. Although they lie within the tropics, the weather is always pleasant, never cold and never oppressively hot, the thermometer seldom reaching above  $90^{\circ}$  even in the hottest days of the warm months, and by ascending the mountain sides a cooler temperature can be enjoyed. The climate, in fact, throughout the year, is the most perfect, healthy, and agreeable that can be found anywhere in the world. During the ship's stay at Honolulu, the average temperature was  $70^{\circ}$ .

These islands being only 2100 miles from San Francisco, the principal seaport on the western coast of America, in weekly communication with said port, and yearly increase of commercial relations and public travel, I consider it a duty to call the attention of the government, through this report, to the existence and spread of leprosy in the islands, with the hope and suggestion that some steps may be taken by the proper health authorities to prevent the introduction of the disease into the United States.

The Hawaiian government saw the necessity some years ago of doing something to prevent the spread of leprosy, and in 1865 founded a leper settlement on the island of Molokai, where patients affected with the disease could be thoroughly isolated, and treated in hospitals provided for the purpose. This system has done much, no doubt, in preventing an increase of the disease, and some indications of progress in that direction would doubtless be observable before this, if existing laws relating to their absolute segregation had been thoroughly carried out. This, unfortunately,

however, has not been done, and a large proportion of lepers are allowed to remain undisturbed, with their families and friends, throughout the islands, to unconsciously disseminate the disease.

As there is a great and perfectly natural antipathy on the part of the natives to removal to Molokai, a branch hospital has been recently started at Honolulu, inviting those affected with the disease to apply voluntarily for treatment and care. This establishment contains now about 100 patients, and with the 800 confined to the leper settlement at Molokai, makes only 900 under government control; while, according to the last report of the board of health, the number of lepers in the kingdom is estimated at 2000, or 5 per cent. of the whole native race, and also stated that as many more have the seeds of the disease. It is therefore safe to state, that there is not only a larger proportion of recognized lepers in the Hawaiian Islands than in any other country in the world, but that the proportion, from statistics and observation, is steadily increasing.

I was pleased to learn, before leaving, that the board of health had determined to make a rigorous search in the districts of Honolulu to ascertain the exact number of persons suffering from the disease, their race, sex, age, condition, and other particulars, to settle the question as to the number at large in that particular section, and to subject them to proper treatment.

Leprosy, according to the popular belief of most natives, is supposed to have been introduced into the islands about forty years ago from China. The disease from that time has gradually spread from year to year, and has markedly increased since the indiscriminate and careless vaccination practised during the severe epidemic of smallpox in 1853, until it has finally assumed the proportions heretofore stated. It may be well to mention that, during the epidemic of smallpox referred to, there were 3546 recorded cases and 1276 deaths.

I can hardly credit the universal spread of the disease, but for the general belief that it is considered only slightly, or not at all contagious, and treated as such, from the beginning—allowing free individual intercourse—with weak enforcement of laws for its suppression.

The question of contagion forms, no doubt, a great factor in the study of the disease, and should be definitely settled before permitting the freedom now allowed. The whole history of leprosy in the islands points directly to its being contagious in nature, a disease certainly communicable to healthy persons, and propagated by the general mode of living to such natives coming in contact with it who are rendered susceptible to the poison through want of cleanliness, insufficient or poor diet of raw fish, seaweed, poi, etc., combined with a condition of system impoverished, perhaps, by syphilis, from which the native population have no doubt largely suffered.

It is an historical medical fact, that leprosy has spread in isolated villages,

from a single imported case, and reliable professional men, who have had opportunities of observing the disease, in countries where it exists, all declare in favour of contagion, viz: McNamara, of Bengal; Lob, of Hong Kong; Wolff, of Madeira; Millray, of Trinidad, and many others.

The Hawaiian Government should deal with the disease as a strictly contagious one, and adhere to such theory, in all legislation upon the subject, until the question has been reasonably settled, by those competent to investigate it thoroughly, by future research, and study.

Such study, and investigation, for the general benefit, if not preservation, of a race, should be commenced at once, and if a board, or scientific commission, of medical men, organized at any cost, and composed of experts, invited if necessary, from the United States and Europe, could be constituted by the Government for this purpose, there can be no doubt, great and good results would follow. The Government would certainly have the satisfaction of knowing that it had done all in the power of a civilized people to do, and upon the facts contained in the recommendations of such a commission, definite and wise legislation could be enacted to control the disease. Very little interest is taken in it by the general practitioners of medicine and others in Honolulu, owing no doubt to the fact that the Government offers no inducement to study it properly, and advise upon the subject.

At present, nothing certain is known regarding the cause of leprosy. It existed, no doubt, as a distinct disease in the middle ages—prevailed to a considerable extent in modern times in certain portions of Europe, and is still met with in warm climates of various parts of the world. With such facts, the theory recently advanced that it is identical with a certain stage of syphilis cannot be admitted, and any such belief can but be provocative of harm by misleading those who have the responsibility of action in the great question of relief, for a suffering people. Professional men, conversant with the medical history of the two diseases, and who have observed them clinically, cannot fail to recognize them as entirely distinct from each other.

The perfect teeth, thickened skin, palsy of face and limbs, *leonine* expression of countenance, loss of eyebrows and hair, except that of scalp, tubercles of the face, nose, ears, and extremities, varying in size from a pea to an olive, change of voice, ulceration of the surface, etc., insensibility of the general surface in patches, smooth and glistening condition of the skin immediately surrounding, dry ulceration, and falling off of fingers and toes, all appearing in cases of leprosy of different types, cannot be mistaken for syphilis. Nor can the lesions of bones of the tibia, skull, clavicle, ulna, and ribs, unsound teeth, alopecia, sore throat, iritis, gummy tumors, mucous and scaly patches, rupia and deep chronic ulcers, met with in cases of confirmed constitutional syphilis, be mistaken for leprosy.



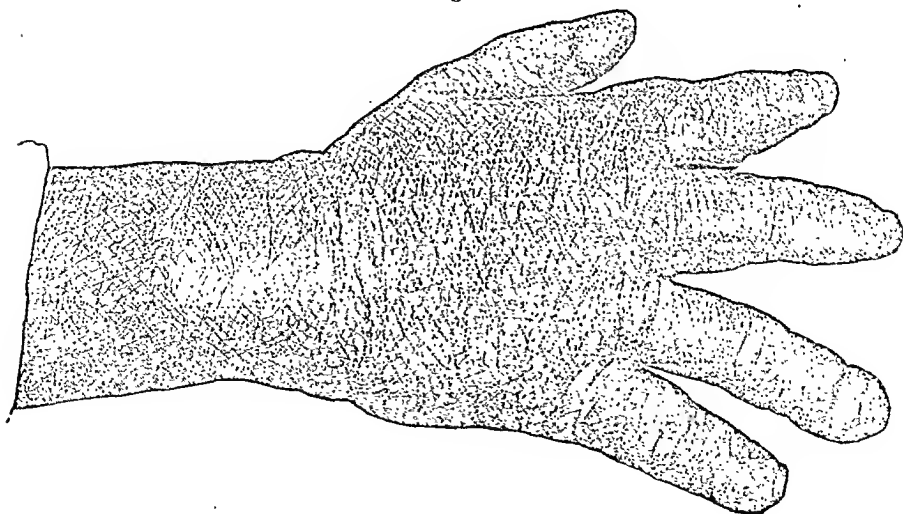
My stay at Honolulu was too limited to study the disease satisfactorily, and I can therefore give only such observations regarding it as were de-

Fig. 1.



Face of a leprosy patient, aged 30. Showing the peculiar "leonine" expression, and tubercular condition of the chin of the face. Under observation for three years.

Fig. 2.



Hand of above patient.

rived from individual cases coming under personal examination. These, in every instance, were similar to those seen some years ago in China and India, and no doubt the leprosy of ancient times. The special points in typical cases of course vary according to the stages of the disease. In the classification *tuberculosa*, spots generally appear first on the face, then on the legs, arms, and trunk, followed by an eruption and attack of fever, and often erysipelas. The attacks of leprosy fever, and erysipelas, are quite common throughout the disease, but rarely fatal, the result being to diminish the redness and swelling of existing tubercles, and produce new growths, until finally patients present the appearances shown in the appended illustrations, strongly characterized by *leonine* expression and other peculiarities.

In the classification *anæsthesiaca*, there is a feeling of numbness, commencing generally in the under surface of the great toes, or ulnar side of hand and fingers, discoloured spots on arms, body, face, and lobes of ear, both analgesic and anæsthetic, palsied expression of countenance, and contraction of toes and fingers, shown in the accompanying figures. On

Fig. 3.



Side view of a leprosy patient, aged 42. Disease five years' standing—tubercular and anæsthetic.

the spots in this form of the disease I have noticed papules, but rarely tubercles; nor is fever or erysipelas so frequent in such cases.

Fig. 4.

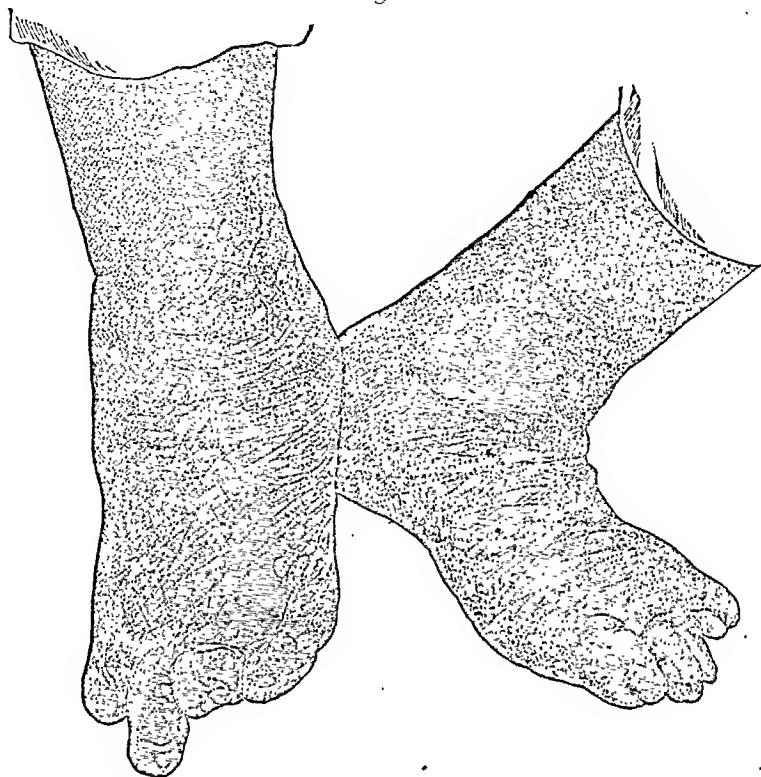
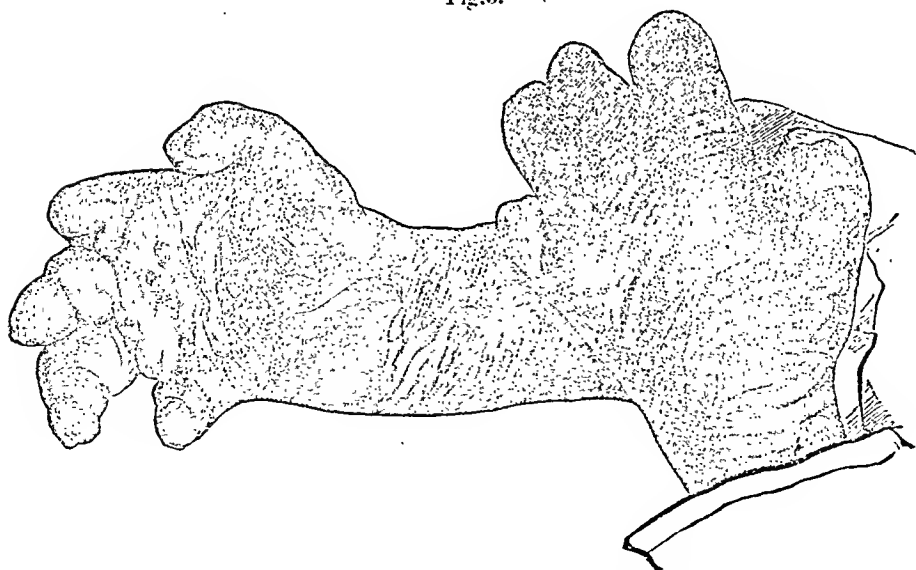


Fig. 5.



Feet and hands of a leprous patient, aged 36. Disease 10 years' standing.

I noticed in the large class of leprous patients visited a universal happy disposition, few complaints, and little realization, of their general hopeless condition. Many of them live on for years afflicted with a disease that is certainly incurable in advanced stages, and prospect of cure in any stage most uncertain.

Those under treatment in hospitals under government control receive a fair diet of poi, salt fish, meat, and vegetables, and as much professional attention and nursing as is possible, under the present ill-advised system. The iodide of potash and other remedies seem to be freely used, with imperfect results, and no record, if they have been tried, of the efficiency of hoang-nan and calcium sulphide. This whole subject certainly deserves not only the attention of medical men, but of governments and legislators, and no civilization can expect to prosper which allows its afflicted people to suffer and remain in the condition they now are. Without some speedy radical change, on the part of the government, by special and wise legislation, regardless of cost, directed to the proper investigation and possible extermination of this disease, and to ameliorate the condition of the people, one can but predict for the Hawaiian race, with the present number of naturalized foreigners and yearly increased immigration of Portuguese, Chinese, Norwegians, and Italians, a total extinction of the native population throughout the islands.

The decrease of the native population from 1872 to 1878 was 4023; increase of foreign population for the same period was 5111.

The population of the group was by the census of—

1832	.	.	.	.	.	.	.	.	130,318
1836	.	.	.	.	.	.	.	.	108,579
1850	.	.	.	.	.	.	.	.	84,165
1860	.	.	.	.	.	.	.	.	69,700
1866	.	.	.	.	.	.	.	.	62,959
1872	.	.	.	.	.	.	.	.	56,897
1878	.	.	.	.	.	.	.	.	57,985
Total population, December 28, 1878									57,985
" " " " 1872									56,897
Total increase since 1872									1,088
Total number of natives and half-castes in 1872									51,531
" " " " " in 1878									47,508
Decrease since 1872									4,023
Total number of foreigners in 1878									10,477
" " " " 1872									5,366
Increase since 1872									5,111
Total increase of foreigners since 1872									5,111
" decrease of natives since 1872									4,023
Total increase of population since 1872									1,088

Total number of Chinese in 1878 . . . . .	5,913
" " " " 1872 . . . . .	1,938
Increase of Chinese since 1872 . . . . .	<u>3,975</u>

Total number of half-castes in 1878 . . . . .	3,420
" " " " 1872 . . . . .	2,487
Increase of half-castes since 1878 . . . . .	<u>933</u>

The percentage of decrease of the *whole* population has been as follows :—

1850 to 1853, 3 years . . . . .	13.10
1853 to 1860, 7 " . . . . .	4.70
1860 to 1866, 6 " . . . . .	9.67
1866 to 1872, 6 " . . . . .	9.62

The percentage of increase from 1872 to 1878 is 1.91.

The percentage of decrease of the *native* population, including half-castes, has been as follows :—

1860 to 1866, 6 years . . . . .	12.27
1866 to 1872, 6 " . . . . .	12.31
1872 to 1878, 6 " . . . . .	7.80

The percentage of children under 6 years of age to the whole population was :—

In 1872 . . . . .	12.08	In 1878 . . . . .	13.13
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Total number of children under 6 years of age in 1878 . . . . .	7,608
" " " " " " 1872 . . . . .	<u>6,869</u>

Excess in favour of 1878 . . . . .	739
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The percentage of children under 15 years of age to the number of females was :—

In 1866 . . . . .	58.39	In 1872 . . . . .	62.59	In 1878 . . . . .	68.11
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The percentage of children under 6 years of age to the number of females was :—

In 1872 . . . . .	27.21	In 1878 . . . . .	31.86
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Of the 2581 inhabitants reported for the island of Molokai, 806 were lepers of the leper settlement of Kalawao.

## ARTICLE XII.

### TYPHO-MALARIAL OR CONTINUED MALARIAL FEVER.

By R. D. WEBB, M.D., of Livingston, Alabama.

FOR several years past, a continued fever has prevailed in this county (Sumter) and other parts of Alabama, variously designated as neglected

remittent, continued malarial, typho-malarial, and typhoid fever. This variety of names shows the unsettled condition of the medical mind in regard to its nature. It is doubtless the same fever brought into prominence during the late war, by Dr. J. J. Woodward, under the title of typho-malarial.

He says, in his paper read before the International Medical Congress, Philadelphia, 1876 :—

“I never meant by this term to represent a specific type of fever, but intended to designate all the many-faced brood of hybrid forms resulting from the combined influence of the causes of malarial fevers and of enteric fevers.”

Dr. Jerome Cochran (*Transactions of Med. Ass. State of Alabama*, 1875), while denying the existence of a true hybrid, says :—

“If fevers cannot change their types for the accommodation of careless diagnosticians, it may still be contended that two distinct fevers, as typhoid and malarial, may afflict the same human organism at the same time, both running through their usual stages side by side, and presenting a double set of lesions. Admitting, however, that two specific fevers may at the same time infest the same body, this view affords no aid to the advocates of the typho-malarial doctrine.”

Dr. R. B. Maury (*Amer. Jour. Med. Sci.*, Apr. 1881) :—

“The existence of a hybrid between typhoid and malarial fevers has been conclusively settled by Dr. Woodward’s researches. But although such forms of disease exist, it should be remembered that, in civil practice at least, they are very rare. These cases I have always designated as *malarial continued*.”

Dr. Johnson, Washington, D. C. “Mild Forms of Continued Fever” (*Amer. Jour. Med. Sci.*, Oct. 1882), says :—

“The facts properly classified and studied in their mutual relations lead inevitably to the conclusion that there is no justice, but positive error, in affixing the term ‘malarial’ to all negative and doubtful cases of continued fever, as is the habit in diagnosis wherever the malarial and typhoid diseases appear side by side. The escape from the dilemma of uncertainty by offering a *hybrid name* to the doubtful cases is illogical. The conception of typho-malarial fever has come to be a device for easing one’s self of the responsibility of accuracy in diagnosis.”

Without further multiplying individual opinions, these extracts may be taken as representing the contrariety of medical opinion upon this subject. The following, based upon thirty years’ observation of malarial fever at this point, is offered as a contribution to this subject.

The fact, that changes in the phenomena or type of diseases occur, is admitted by all. Malarial fevers are not an exception to this rule. Within the past half century they have undergone such striking changes as to almost conceal their lineage. These changes are observable both in regard to their *habitat* and type.

A prominent physician who had practised at Hillsboro, North Carolina, for fifty years, told the writer in 1851, that he had never seen a case of intermittent or remittent fever in that town or neighbourhood. Since that time they are common diseases of that place and State.

The following is an extract from a paper read before the American

Public Health Association, Savannah, 1881, "Malaria in New England," by Dr. J. F. Adams:—

"To the present generation of New Englanders, malarial fevers of home origin have been, until quite recently, wholly unknown. When that portion of the country was first settled *fever* and *ague* was one of the common diseases. Writers of that day make no mention of it subsequent to the latter part of the seventeenth century, and from this time onwards for a hundred years, namely; until the latter part of the eighteenth century, New England enjoyed complete immunity from the disease. From 1793, however, intermittent and remittent fevers prevailed in the western portion of Connecticut and Massachusetts until 1799. It then disappeared, and did not reappear until 1828, when it prevailed until 1836. From 1836 to 1850 no cases occurred. The latter part of 1850 it commenced another invasion, and at the present time prevails in Massachusetts, Connecticut, and Rhode Island."

In addition to this it may be stated that the Jersey shore, which was for a long while free from malarial fever, is now one of its favourite habitats. Such examples might be indefinitely multiplied, but this will suffice.

But it not only changes its locality at certain periods, but its phenomena—its type—undergo decided changes in the same locality at different periods.

In 1873 I made a report to the State Medical Association of Alabama, in which reference is made to this tendency to change in diseases, as illustrated in the malarial fever of this section. The following is an epitomized extract from that paper.<sup>1</sup>

Soon after the settlement of Sumter County in 1832-3, intermittent and remittent fevers made their appearance, and from 1835 to 1842 the county was noted for the variety and severity of its malarial fevers. The cold stage, or as it was frequently called, the *ague*, was the prominent feature of the disease. The initiatory stage was ushered in by gaping, stretching, and severe shaking, which made the teeth chatter; the pains in the back and limbs were severe. The chill would often last for an hour or more, and in some instances, the shock to the nervous system was so severe, as to produce a state of depression from which it was necessary to procure reaction by stimulants and external heat. The chill was followed by a fever of short duration and high grade, which went off with profuse perspiration. In from six to eight hours the patient was up, following his usual avocation. These milder intermittents were in the fall of 1835, accompanied by occasional remittents; but it was not until the summer and fall of 1836, that the remittents had become the prominent variety.

"These differed from the remittents of the present day (1847) in the greater distinctness of the cold stage, the higher grade of the fever, and the prominence of gastric and hepatic symptoms. They were ushered in with a sensation of coldness—slight in degree, but often long continued—with restlessness, thirst, vomiting, which were passed into a condition of intense heat and dryness of the skin; excruciating pain in the head and back; white, furred tongue; frequent, tense pulse; restlessness and irritability of temper. After eighteen or twenty hours a moderate perspiration and a less tense pulse ensue.

<sup>1</sup> I am indebted to "The Medical History of Alabama, by Dr. P. H. Lewis," for many of the facts here stated, prior to 1847.

"This remission was soon followed by a renewal of the above symptoms, and unless arrested by appropriate treatment, the patient passed into a state of delirium and fatal collapse.

"With the hepatico-gastric variety of open grade of remittent fever was mingled the *algid* variety of congestive fever. The patient complains of being languid and oppressed; he is restless; his skin is cool, damp, and clammy; his breathing is interrupted and sighing. In a few hours the extremities, as felt by another, become cold, soon extending up the body. The pulse is small and frequent, becoming finer and finer until it is imperceptible. The whole surface is bathed in a cold sweat; the skin is shrivelled, and the surface to the hand is cold and clammy; while the patient complains of being hot, and wants the cold, fresh air to blow upon him."

These were the typical malarial fevers from 1836 to 1842. From this time the malarial fevers began to assume a less open and active grade, and by 1845 they gradually approached a typhoid form. The cold stage was now less marked, being in many cases scarcely perceptible, the fever was less active, and the remissions less marked and of shorter duration.

At this time (1845) well-defined typhoid fever was imported from Virginia, by a company of negroes, into the county, and prevailed until 1855. This was an epidemic of true enteric fever, as indicated by its characteristic symptoms, and proven by ulcerations of Peyer's glands in numerous post-mortems.

Thus Dr. L. H. Anderson (at that time practising in Sumter County), in 1851 (*Trans. of Med. Assoc. State of Alabama*, p. 97), says:—

"The symptoms of the disease here do not differ materially from those laid down in the books, and the anatomical lesions are the same as are obtained elsewhere."

Dr. W. P. Reese, of Selma (1851), says:—

"Among the early symptoms we have dry, harsh skin, rather above normal temperature; tongue slightly coated, white, generally contracted, with point and edges more or less red. Later in the attack coma, subsultus tendinum, delirium, sleeplessness, meteorism, diarrhoea, enteric hemorrhage, and the tongue becomes very much contracted, dry, most frequently deep red on point and edges, and dark in centre; sordes and scaling of the epithelial coat of the lips."

Again, Dr. Anderson, in 1853, in enumerating the symptoms, says:—

"Diarrhoea existed in all fatal cases, and in most severe ones. The rose-coloured spots were found in nearly all the whites. Hemorrhage from the nose occurred in three-fourths of the cases; internal hemorrhage in about one-eighth; the tongue in all bad cases red and dry; in some brown and cracked. If furred at first, it generally became clean in a week or ten days; tympanites and gurgling were observed in about two-thirds of the cases."

Appended to these characteristic symptoms are the post-mortem appearances of three cases. I give the lesion in ileum of two of them.

"1. Ileum intensely injected on its outer surface; numerous ulcerations of Peyer's patches and the solitary glands, some almost perforating the intestines; more abundant near the valve.

"2. The lower part of the ileum and upper part of colon are one mass of ulceration, nearly black, and have a gangrenous odour. Higher up the ileum and lower in the colon the ulcerations were not so aggravated."



This epidemic of typhoid fever began to disappear in 1855-6, and was followed by a period of health from 1860 to 1866, during which time we had only mild intermittents and remittents. For the ten years, from 1856 to 1866, I do not remember to have seen a case of typhoid fever, and only a few malarial fevers, which continued so long as ten or fifteen days, assuming a semi-continued form in the last week of the attack.

In 1866 another wave of malarial fever set in, and in 1867 the fearful variety, known as *hemorrhagic malarial fever*, made its appearance, and prevailed until 1872. Since then it has been rare, only an occasional case being seen. On the decline of this hemorrhagic variety, the malarial fevers assumed a remittent type, with low grade of fever, and very slight remissions, until they have gradually attained the characteristics of what are now known as *typho-malarial* or *continued malarial fevers*; by others as typhoid fever.

These historical facts point to a change—a process of evolution—in the cause of these fevers, with a corresponding change in the phenomena of the resultant disease; yet it retains its malarial characteristics, and, though it resembles typhoid fever, is capable, by a proper differentiation, of being separated from it.

If the opinion that malarial fevers are of a fungous origin be true, this change of characteristics in the poison—the contagium vivum—is altogether consistent with the operations of nature in the vegetable world. Those who have read Darwin's origin of species will remember numerous instances of the appearance of new varieties of plants under varying circumstances of drainage and culture; and these influences are specially felt by the lower orders of plants, such as the algæ and fungi. Why then may we not have new varieties of malarial poisons, developed under varying environments? And if a change of poisons, why not an alteration in the characteristics of the resultant disease? The idea is not only consistent, but sustained by the admitted changes in malarial fevers in this country, referred to above.

Following the decline and disappearance of the hemorrhagic malarial fever of 1867 to 1872, the fevers of this county again took on a lower grade. Semi-continued fevers became gradually more common, until for the past three or four years continued malarial or the so-called typho-malarial fever is the prevalent disease.

As illustrative of these changes, and the character of the disease, I will give notes and charts of several cases, taken from my note-book. I would first direct attention to the hebdomadal feature of malarial fevers, a feature to which I will again refer in speaking of the differential diagnosis of malarial and typhoid fevers. I believe we often meet with cases of malarial fever which it will be difficult to control until the expiration of the seventh or eighth day (the hebdomadal period), even though we may use quinine freely up to this time.

Acting upon this view I am often indebted for success in such cases to the persistent use of quinine until this period, whereas, had I desisted sooner, my patient would have been doomed to a two or three weeks' spell of continued malarial or the so-called typho-malarial fever.

CASE I. Monday, Aug. 23, 1875, I visited A. K—, a girl of 12 years of age, and received the following history of her case:—

On Saturday P. M., Aug. 21, she had symptoms of chilliness followed by fever. She got that evening a dose of calomel which acted well. The fever continued through Saturday night, with slight remission on Sunday (22d) morning, and also through Sunday and Sunday night, and now on Monday (23d) at 12 M. she has fever of a moderate grade. The parents were uncertain as to whether or not there had been remissions of fever on Sunday and Monday mornings; and were "waiting for the fever to go down sufficiently to give quinine."

Her fever (12 o'clock Monday) is not high, temperature  $102^{\circ}$ ; pulse 110, and not full; tongue slightly furred and moist.

I directed 12 grains of quinine at three doses, to commence at 4 A. M. next morning. Intervals of two hours.

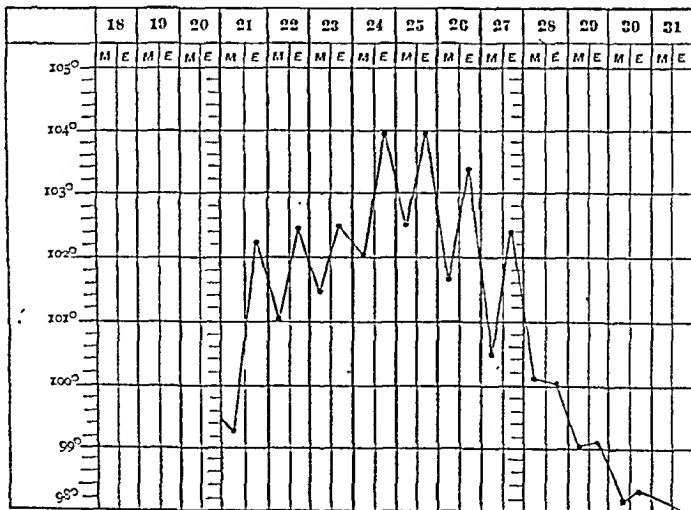
24th, A. M. Much the same; temp.  $102^{\circ}$ ; disposed to diarrhœa; slight tympanites; no tenderness of iliac region; urine high-coloured. R. Tr. opii camph. and plumbi acet., to keep bowels in check. Spts. terebinth. rubbed over abdomen.

P. M. Temp.  $104^{\circ}$ ; other symptoms same. R. Quin. sulph. gr. v, every two hours, until she takes 15 grains. To be commenced at 2 A. M. to-morrow.

25th, A. M. Temp.  $102.5^{\circ}$ ; pulse 115; tongue moist, broad, and whitish; tympanites increased; tenderness over abdomen; and still disposed to diarrhœa. R. Poultice to abdomen, and continue use of astringents.

P. M. Patient looks depressed; quite deaf; bowels tender; tympanites; tongue moist; temp.  $104^{\circ}$ . R. Repeat quinine, 5 grains every two hours, commencing at 2 A. M., until 20 grains are taken. Then suspend until 12 M., when two more doses are to be given.

Chart I.



Case I. Temperature curve.

26th, A. M. Remission more marked, and temperature  $101.5^{\circ}$  P. M. Temp.  $103.5^{\circ}$ ; other symptoms same. R. Continue quinine as yesterday.

27th, A. M. Temp.  $100.5^{\circ}$ ; bowels controlled; not so tender or tympanitic.

P. M. Temp.  $102.3^{\circ}$ ; tongue moist and clean; tympanites nearly gone. R. Continue as last two days.

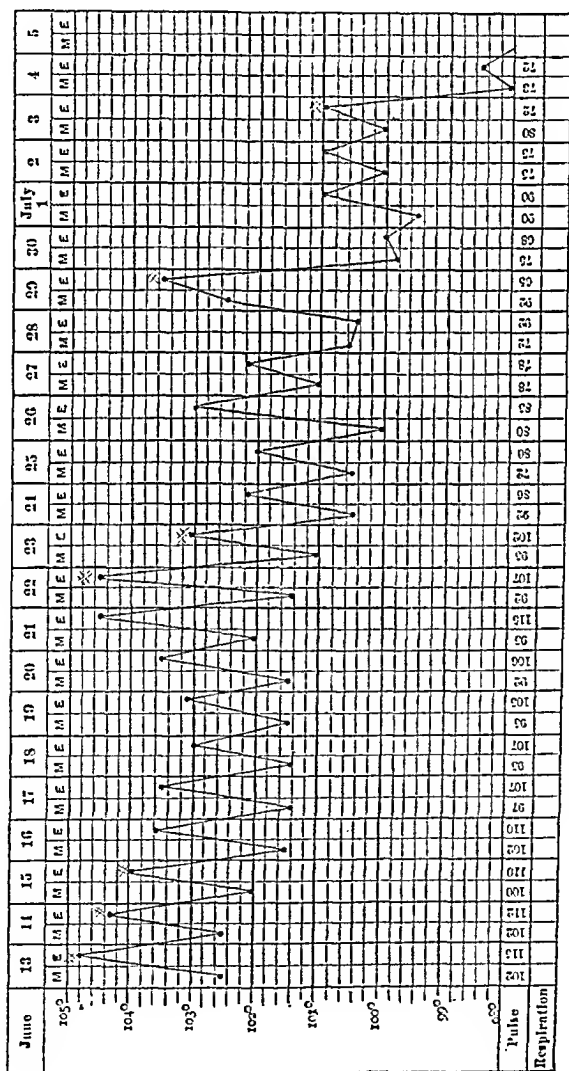
28th, A. M. Patient looks and feels better. Temp.  $100^{\circ}$ .

P. M. Temp.  $100^{\circ}$ ; patient expresses herself as much better. R. Quinine, 15 grains during night.

29th, A. M. No rise of fever since yesterday morning, and patient desires to sit up. Temp.  $99^{\circ}$ .

This case is a fair specimen of those cases denominated continued malarial, arrested at the first hebdomadal period; but which, under a less

Chart II.



Case II. Temperature curve.  $\times$  Quinine used.

persistent use of quinine, would have continued to the second or third hebdomadal period, and developed more decided typhoid phenomena. It also illustrates the gradual changes which have been going on in malarial fevers in the last decade.

I will give an outline of two other cases, as typical of the present continued malarial fever, and also as illustrative of the hebdomadal exacerbations in the course of the fever.

CASE II. R. S., white, male, 24 years.

This patient was seen on June 13, 1881, the seventh day of the attack. Reported himself as attacked on 6th of June with chill followed by fever of a remittent type and mild grade. On the 13th (first hebdomadal period) had a decided exacerbation of fever.

13th, P.M. Found him with fever, temp.  $104.6^{\circ}$ ; pulse 115; slight tenderness over iliac region; and slight tympanites. Bowels acting each day, but no tendency to diarrhœa; tongue whitish, broad, and moist. R. Quinine 15 grains latter part of night. The quinine was continued for three days, with decided abatement of fever as indicated by temperature chart. The quinine was then discontinued, and I ordered, R. Lugol's solution of iodine  $\mathfrak{z}$ ij, carbolic acid  $\mathfrak{z}$ ss, water  $\mathfrak{z}$ vj. Sig. Teaspoonful every two hours. Fever continued to decline gradually until the 15th (second hebdomadal period), when he had another decided exacerbation of fever. Temp. rose to  $104.5^{\circ}$  (see chart II.). Quinine, 22 grains were given on 16th and 17th. Temperature again abated, and surface became moist and cool. Tongue furred, and dry in centre. No tenderness or tympanites; abdomen flat; bowels constipated for four days. Bowels acted on 24th without medicine. From 24th to 28th fever gradually declined, and tongue became moist and clean. On evening of 28th (third hebdomadal period) had a distinct chill, followed by increase of fever, which abated next morning. Got on 29th to 30th quinine 20 grains. The fever again abated under the influence of quinine, and the patient now rapidly convalesced, and was clear of fever July 4.

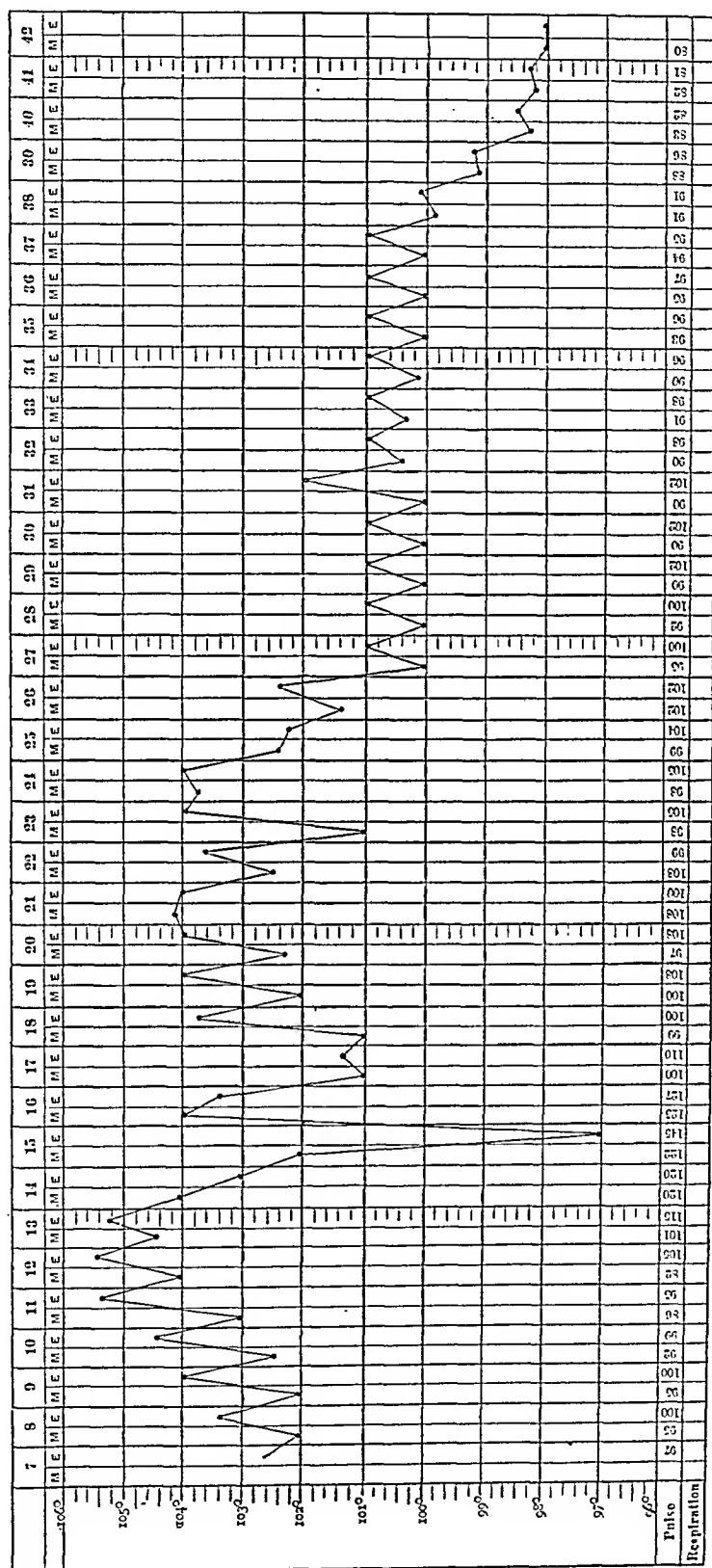
In this case, which continued four weeks, it will be seen that the temperature curve is too irregular for typhoid fever, while the exacerbations on the 13th, 21st, and 29th indicate three distinct hebdomadal periods which is characteristic of malarial fevers, and their habit of returning at the expiration of the seventh day, and its multiples.

The absence of diarrhœa, tympanites, or tenderness in iliac region, and of the rose spots, also militates against classing it as typhoid fever. It is more properly classed as *continued malarial fever*.

Other cases of which I have notes present both in the temperature curve and symptoms, at different stages of the attack, the two sets of symptoms combined in one case. I give the following chart as illustrative of this variety of cases.

CASE III. This patient, a coloured girl, 15 years old (nurse for Mrs. Mason), was seen first on eighth day of attack. Reported as having continued fever, with morning remissions. Abdomen flat, no tenderness, no tympanites; tongue lightly furred, with red tip and edges, moist and broad. From 8th to 12th, temperature steadily increased each day, while

Chart III.



Case III. Temperature curve.

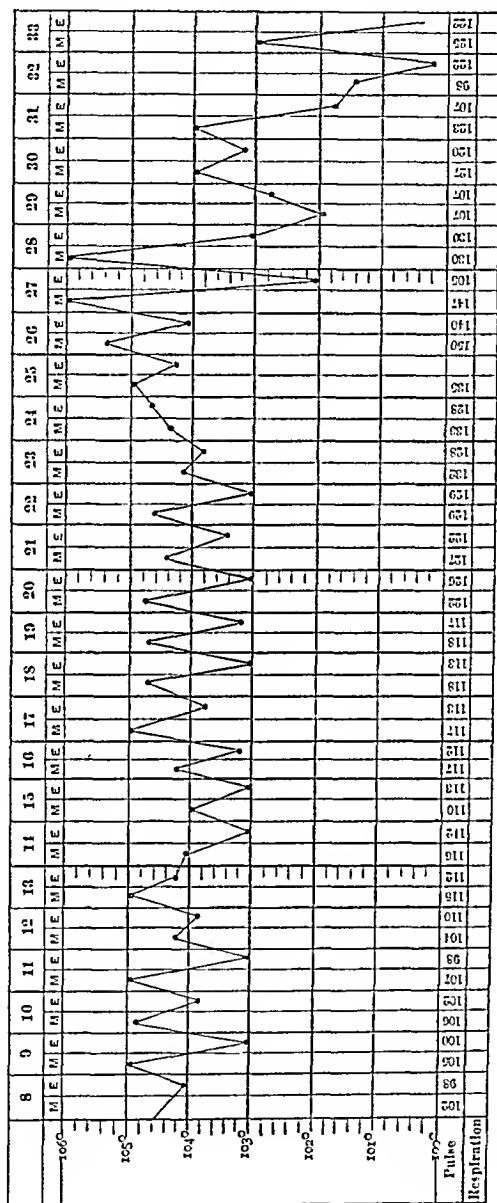
the pulse declined in frequency and force. On the night of the 14th day patient had a copious hemorrhage from the bowels. Morning of 15th found her with cool, clammy surface, and pulse very feeble and rapid. This depression continued to evening of 15th, when the temperature had sunk to  $97^{\circ}$ , and the pulse rose to 147, scarcely perceptible, and surface bathed in perspiration. Morning of 17th, temperature  $104^{\circ}$ , and pulse 135. The patient continued very feeble for several days, but with stimulants, milk diet, and essence of beef, she gradually rallied, and continued to improve to convalescence.

The bowels remained constipated throughout, the abdomen flat at all times, tongue never dry or brown, and no tenderness or tympanites. On the 22d day the parotid gland became swollen and painful. It was lanced on 28th to give vent to pus which had formed. From 9th to 12th had 15 grains quinine daily; from 15th to 17th, stimulants freely; from 17th to 32d, Lugol's tinct. iodine and carbolic acid, lemonade freely, and surface sponged with cold water whenever temperature was above  $102^{\circ}$ .

Here we have a case in which, up to the 26th day of the attack, the temperature curve was too irregular for typhoid fever, while from that time to convalescence we have the regular evening and morning rise and fall of a typhoid patient. The hemorrhage on the 14th may also be considered as indicative of ulceration of Peyer's glands, and to this extent points to typhoid fever; but the entire absence of tenderness, tympanites, dark or dry tongue, and diarrhœa, has an opposite indication. The hemorrhage is not to be regarded as certainly indicating ulceration of Peyer's glands. In the present case I do not think it was from this source. There was no tenderness to indicate such ulceration, and the hemorrhage was too profuse and too early in the attack. It was more probably from a deeply congested condition of the mucous membrane of the small intestines, which is not uncommon in malarial fevers. I have seen quite a number of instances of hemorrhage from the bowels in undoubted cases of malarial fever. Only last month (September, 1882) I held a post-mortem on a case of well-marked malarial fever, in which there were two copious hemorrhages from the bowels. The mucous membrane of the ilium for a foot or more above the ilio-cæcal valve was congested to a good degree, but there were no signs of ulceration or enlargement of Peyer's glands. About the middle of the small intestines, for 12 or 14 inches in length, the gut was externally dark, and on examination of the mucous membrane of this portion, it was *intensely* congested; to such an extent as to give it a deep purplish hue; and this portion of the intestine was filled with semi-fluid blood. Here was evidently the source of the hemorrhage in this case, and in the case above related I am disposed to believe it was from a similar source. In the influence of the splanchnic nerve, as a vaso-motor, over the capillary circulation of the abdominal organs, I believe we have an explanation of many of these hemorrhages; and this influence is specially brought into action by the malarial poison, as manifested in the late epidemic of hemorrhagic mala-

rial fever, which still, to a very limited extent, is met with in this county.<sup>1</sup> For these reasons I am disposed to class this case also as one of *continued malarial fever*. It might be designated by *typho-malarial*, using the

Chart IV.



Case IV. Temperature curve.

term "typho" not as designating a hybrid of typhoid and malarial fevers, nor as indicating a disease distinct from either, but as a descriptive prefix, just as we use the term *hemorrhagic* to denote the variety of malarial fever which prevailed here from 1867 to 1872. But this is misleading.

<sup>1</sup> See Report on Hemorrhagic Malarial Fever, Ala. Transactions, 1876.

I will give tracings of temperature and pulse of one more case, which exhibits still more strongly the characteristics of typhoid fever, and in which post-mortem showed ulceration of Peyer's glands:—

CASE IV. N. K., coloured girl, 14 years old. This patient nursed for Mrs. Brown (marked on Map 11), about 250 yards northwest from the old mill-house and the marshy lot, and slept at night at the house of Kennard (marked 12 on the map). I saw her, July 19th, the eighth day of her attack, at Kennard's.

She was reported as having fever with morning remissions; the attack being gradual in its approach. The temperature was A. M.  $104^{\circ}$ , P. M.  $105^{\circ}$ ; tongue slightly furred, red at tip, moist; no tympanites or tenderness over iliac region. During the next four days the bowels were disposed to act too freely, and moderate tympanites was developed.

Her bowels continued to act too freely up to 26th day of attack, notwithstanding astringents and opiates were freely used. The tongue continued throughout moist and slightly red, but not pointed or contracted. There was at no time decided tenderness over iliac region, nor much tympanites. The discharges from bowels were liquid, and of brownish colour. Muttering delirium and subsultus tendinum were developed during the last week; she became constantly more debilitated, and died in a semicomatose condition on 33d day of the attack.

*Post-mortem.*—Peyer's glands for two feet above ilio-cæcal valve badly ulcerated, some of the ulcers nearly perforating the walls of intestine. One ulcer four inches from valve, nearly an inch in diameter. The solitary glands of ascending colon swollen, bluish, and ulcerated, resembling somewhat a small pustule of variola, with centre pitted.

Here we have what many physicians would regard as a well-marked case of typhoid fever, with the diagnosis confirmed by the characteristic lesions.

But the circumstances under which this case occurred, lead me to question the diagnosis. Let us inquire more minutely into the history and circumstances of this case, and also into the diagnostic value of the ulceration of Peyer's glands in typhoid fever.

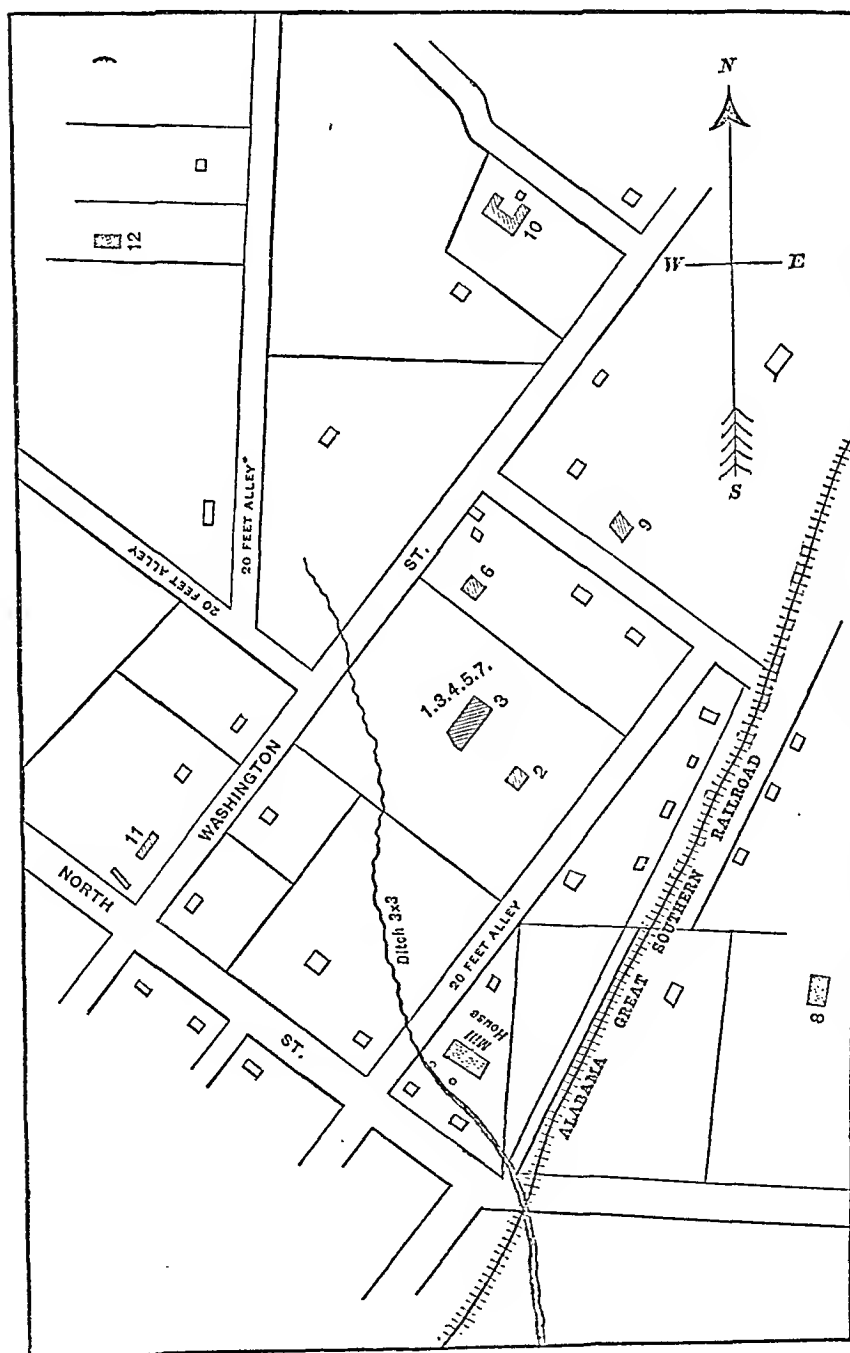
In order to render this more plain I will give a very succinct account of the ten cases which occurred in the village of Livingston, in this county, supposed to have originated from the unsanitary condition of a marshy lot and old mill-house. This case was one of the ten. I have also prepared a map of that portion of the town, so as to make the relation of the cases to this lot plainer. These cases I have numbered from 1 to 11, and have designated their locality on the map by corresponding numbers. No. 10, a similar case, which occurred at the same time, is not included, as this was known to be of a different origin. He came here sick from Macon, Geo. (Case II. p. 457).

No. 1.—Feb. 18, 1881, saw in consultation Mrs. M., aged 40. She had been sick for ten or twelve days with fever of a remittent type. Premature labour ( $6\frac{1}{2}$  months) supervened, with severe hemorrhage, puerperal septicæmia, typhoid symptoms, and several severe enteric hemorrhages during the last week of her illness. Died March 11th in fourth week of attack.



No. 2.—During the early part of the attack of Mrs. M., a little negro (6 years old), on the same lot, died of a continued form of fever, in the second week of the attack. No physician in attendance.

Nos. 3 and 4.—The latter part of February two little girls (8 and 10 years old), children of Mrs. M., had attacks of remittent fever continuing ten to fifteen days.



Map of Livingston, showing the location of houses in which cases of fever occurred.

No. 5.—March 21st, a little girl (aged 6), of the same family, had an attack of remittent fever lasting eight days.

No. 6.—During March, a negro woman, on an adjoining lot, died from a similar attack of remittent fever, during which, as in Case I., premature labour (7 months) occurred, with severe hemorrhage.

No. 7.—April 30, B. M., a boy of 16, of the Mason family, was attacked.

These cases all had a striking resemblance, and none of them, except the mother (in the last week), exhibited any well-marked characteristics of typhoid fever. And in her case, this is reasonably accounted for by the septic condition following the premature labour.

The tongue in all of them was whitish, broad, and moist throughout. No tympanites, no tenderness over iliac region, no diarrhoea but rather constipation, no rose-coloured spots.

No. 8.—This girl nursed for Mrs. M., was taken sick at her house, but went to her mother's place (Hale's) to be sick. Her case is reported as Case III., p. 457.

No. 9.—H. B., negro, male 70 years old. Also on adjoining lot. I saw this case May 1, had been sick about two weeks. I found him much emaciated; abdomen flat, bowels constipated; tongue slightly furred, red tip and edges, but moist; bronchial respiration, with subcrepitant râles over both lungs; pulse 130, and feeble; temperature 101.

He gradually improved until at end of fifteen days his lung trouble had disappeared, temp. 99°, and he was able to sit up. On May 22, he was quite feeble, bowels constipated. He had very poor nursing (living alone); his diet was poor, and irregularly furnished. He continued to grow more feeble, and died (inanition) on the 27th. No tracings were kept of temperature.

*Post-mortem* five hours after death. Cadaver very much emaciated; scarcely a particle of adipose tissue; lungs collapsed, free from inflammatory lesions, and very little blood in lung tissue. The heart was large and filled with blood. Bloodvessels on the stomach and intestines filled with blood, giving them a dark hue. Stomach empty, with engorged mucous membrane. The small intestines were empty, containing only a small quantity of mucus. The spleen was very small, shrivelled and nodulated. Liver natural. The duodenum and three feet of the ileum next the ileo-cæcal valve were carefully examined. No trace of ulceration, or enlargement of solitary glands, or Peyer's patches. This, however, was hardly to be expected in one of his age, as Peyer's glands are almost entirely absent in the aged.

No. 11, July 20.—The case of N. K., which gave the ulcerated Peyer's glands. Reported above, p. 461, Case IV.

This was the tenth of a series of cases which had occurred within two hundred and fifty yards of each other (see map). At this time there was no sickness at all resembling this in any other part of the village, and after this case no other case of fever of a continued type occurred in the village within the next twelve months.

What then was the origin or cause of these cases? Such was the question I proposed to myself, as health officer, at the time.

On examination of that part of the village, I found, within two hundred yards of the residence of Mrs. M., where the first six cases occurred, an

alluvial lot of nearly one acre (through which had been cut for drainage purposes a ditch three feet deep), covered from one to six inches, over a considerable part of its surface, with stagnant water, with a greenish scum upon its surface. The ditch had been suffered to fill up, and hence the above condition. In addition to the marshy condition of the surface there were two pools, one 10 by 30 feet, the other 12 by 20, with 12 to 24 inches of water in them. At the bottom of these pools, which had been there for several years, had accumulated mud and trash. When the water in them was stirred, large bubbles of gas freely arose to the surface. An old mill-house on this lot, which was a large, open, frame building, with no floor in one half of it, was used as a slaughter house by the butcher of the village. Here in the unfloored part of the building he had erected a rude stage or rough floor 8 by 15 feet, resting upon poles six inches in diameter, which were laid upon the ground as sleepers for the open flooring. Upon this open floor he slaughtered his beesves, the blood running through the cracks in the floor, saturating the ground beneath, and off at the lower end of the floor, through an open ditch mingling with the surface water, which stood just at the corner of the building. The stench from this was nauseating; and a more filthy and unsanitary place could not well be imagined. But this was not all. In the same building were stored several hundred sacks of Georgia grauge fertilizer; the composition of this manure I do not know, but it evidently contains a large part of animal as well as vegetable matter, and emits a very disagreeable odour. Here then was abundant cause for disease.

As soon as the condition of this lot was discovered (April 25), I called the attention of the town authorities to it, in connection with the occurrence of these cases of fever. Measures were taken to drain the lot, and abate the nuisance in the old mill-house, but it was not until late in May that the object was attained. All of the ten cases occurred within two hundred and fifty yards, nearly due north, or to windward of this filthy lot.

The prevailing winds of this place, at that season of the year, are from the south, so that those patients at Mrs. Mason's, where the first five cases occurred, were directly exposed to the miasmatic influences of this filthy lot.

In fact, so completely was this the case, that towards dusk, when the air became a little damp, the disagreeable odour was plainly noticed at this house.

The localities of these cases are designated on the map by the figures denoting the number of the cases in the foregoing *résumé*. Case No. 8, which died at a house to the east of the filthy lot, nursed for Mrs. M., and was taken sick at her house. Case marked 12 nursed Mrs. M. during her illness, and was constantly day and night with Mrs. M. This patient was not sick until in August.

The circumstances here given point to the filthy lot and slaughter house, as the *source of the poison*, which gave rise to these ten cases.

This being admitted, and I think there can be no doubt of it, we are shut up to one of two conclusions, viz.: either they were *malarial* fever, originating in the foul miasmata of this lot, or if typhoid fevers, they *originated de novo*, from the same source. The latter does not accord with the generally received view of the etiology of typhoid fever; and since the symptoms in none of them, except No. 10, are characteristic of typhoid fever, I believe we are justified, even with ulceration of Peyer's patches in one of them, in classing them as continued malarial fever. Let us now examine the pathognomonic, or diagnostic, value of ulceration of Peyer's patches in typhoid fever, as bearing upon this case. To question this seems rash, yet, at the risk of such a charge, I submit the following:—

(1) The question, whether or not any specific substance is eliminated from the glands of Peyer, is by no means settled. Some have indeed assumed that the disease is peculiarly liable to transmission by means of the alvine evacuations, which also requires proof; and, if so, would not necessitate the idea that this peculiarly poisonous state was the result of any specific elimination from these so-called glands. Jones and Sieveking, in their *Pathological Anatomy*, say:—

“The matter which causes the tumefaction of the agminate and solitary glands is simply a kind of albuminous exudation, not differing we believe essentially from any other. It either, which is most frequent, forms a solid mass, imbedding the natural nuclei of the gland, or affords a plasma, out of which these nuclei develop colloid particles. Black granules and grains of pigmentary matter are often present in it, but they are by *no means peculiar to the typhoid state*. They give to the glands a black dotted appearance, as seen by the naked eye, and this we have observed more than once after death *from other causes than fever*.” (p. 494.)

Aitkin (vol. i. p. 385) says:—

“The specific character of the elements composing the growth cannot be shown to the eye even by microscopic examination. There is nothing in it to distinguish it from other elementary morbid products, which are deficient in the power of organization. . . . The new growth has no specific structure to distinguish it from other morbid growths (Wedl, Virchow, and others); and, although a specific ‘typhus cell’ has been described and figured by Gruby, Vogel, Bennett, and others, its existence is not proven.”

Prof. Klebs also thinks he has discovered the “*Bacillus typhosus*,” and publishes his observations and experiments, which are to some extent confirmed by Prof. Eberth. From experiments upon rabbits with the carefully cultivated bacillus typhosus, Prof. Klebs considers himself justified in the conclusion

“that the bacillus typhosus, under favourable conditions, develops in the mucous membrane of rabbits into the same thread-mycelium as can pervade the whole mass of a typhoid infiltration, and fill the bloodvessels in the human intestines.” (*Amer. Jour. Med. Sci.*, Jan. 1882, p. 251.)

These observations, like those of the same investigator upon the "bacillus malariae," need confirmation, before they can be received as proven. There is, then, upon this ground, no well-founded reason to regard these ulcerations of Peyer's patches as peculiarly typhoid.

(2) Again the morbid development and ulceration of these glands are such as we might expect under a long-continued, or highly engorged or hyperæmic state of the mucous membrane of the intestines from whatever cause. This we would infer from their anatomical structure. After speaking of their structure as differing from the Lieberkühn tubes or follicles around them, Jones and Sieveking say:—

"They are, from their very structure, solid aggregated masses of nuclear particles, peculiarly liable to become enlarged and prominent, the nuclei attracting to themselves plasma, and developing into cells . . . when the inflammation reaches a certain point, they are extremely apt to suppurate and slough." (pp. 489-490.)

Why, then, may we not have these patches of nucleated particles attracting to themselves plasma under other sources of engorgement of the mucous membrane than in typhoid fever? We have seen that in malarial fevers this engorged condition of the mucous membrane exists to the same extent as in typhoid fever, and when this becomes long continued, as in the continued malarial form of fever now prevalent here, why may we not have, in these also, enlargement and ulceration of the solitary and agminated glands of the intestines? There is no sound pathological reason for a denial of this, and if clinical experience sustains it, why not acknowledge the fact, though it may militate against preconceived opinions?

(3) In a large number of fatal typhoid cases, these characteristic lesions are not found, and no doubt, if the cases which recover could be examined, this characteristic "anatomical sign" would be absent in a majority of cases.

Dr. Atkinson says, "taking into account the fact that a large proportion of the cases of typhoid fever recover, it seems to me that this mode of elimination (ulceration of Peyer's glands) occurs much less frequently than the mode already described," which is elimination without ulceration.

Jones and Sieveking, giving an epitome of the account of Rokitansky's views of the changes which take place in the intestinal mucous membrane in continued fevers, say:—

"The intestinal affection, as is well known, is no necessary part of the fever. We have examined the intestines of persons dying of fever, in which very little trace of Peyerian patches or solitary glands could be detected, certainly less than we have seen in the bodies of persons who have died of other diseases."

(4) But they are not only absent in many cases of typhoid fever, but pathological researches show them to be present in other diseases. Thus Dr. Copland, quoted by Jones and Sieveking, speaks of glandular or follicular enteritis as occurring in continued or *remittent* fevers, *dysentery*, and *tuberculosis*.

At a meeting of the New York Pathological Society, held Oct. 26, 1881, Dr. Heineman called attention to the case of a man who had died in Roosevelt Hospital from fracture of the skull. The post-mortem, among other lesions, revealed well-marked *shaven-beard* appearances of Peyer's patches. Dr. Heineman directed attention to the fact that this condition of Peyer's glands was frequently found associated with other diseases than typhoid fever; and also to the fact that it was found in only a part of the cases of typhoid fever. He stated that Dr. Janeway had informed him that, during the last epidemic of typhoid fever which occurred in New York, Peyer's patches were not involved in the cases in which he had opportunity to make post-mortems. Heineman had seen shaven-beard appearance associated with three distinct diseases—meningitis, cholera morbus, and general pyæmia—and Dr. Delafield had seen it in an extensive burn."<sup>1</sup>

Dr. Stokes (*Lectures on Fevers*, p. 137).

"In the outbreak of 1826-8 (if ever there was a true typhus fever, it was then), in a very large number of cases, the secondary local disease of the intestine, considered to belong to the typhoid form, was present."

Dr. Anderson, as quoted by Hudson (*Lectures on the Study of Fevers*), speaking of a case of *scarlatina*, says:—

"We found the mucous membrane of the duodenum covered with enlarged solitary glands, softened and ulcerated, so that in some places the peritoneum alone remained of the coats of the bowels. Peyer's glands were enlarged throughout the greater part of the jejunum and ileum, a patch in the lower part of the latter being about five inches long." "Jane S. died of asthenic confluent *smallpox*, at the period of maturation. We found on the mucous surface of the ileum a number of enlarged Peyer's glands, two of which were ulcerated."

If, then, these ulcerations are absent in a large proportion of typhoid cases, and when present do not exhibit any specific characteristics, but seem to be the result of that hyperæmic condition of the mucous membrane common to this and other fevers, and are found also in many other diseases, are we justified in claiming this anatomical lesion as pathognomonic of typhoid fever?

To return to the case of N. K. (No. 11), in which this ulcerated condition of Peyer's patches was found, but in which the circumstances of its origin, with the absence of many of the prominent symptoms of typhoid fever, indicated it to be *malarial*, are we to be shut up from the presence of this one anatomical lesion, to the diagnosis of typhoid fever? Or rather, may we not expect, in protracted cases of continued malarial fever, to meet with these ulcerations of Peyer's patches, as the natural sequence of the hyperæmic condition of the intestinal mucous membrane, which we know to exist in these cases, and to which we may also reasonably refer the enteric hemorrhages which sometimes occur?

<sup>1</sup> Dr. Blow, Transactions Med. Ass. Ala., from New York Medical Record.

After an experience of over a quarter of a century in this country, during which time I have closely watched the different phases of malarial fever, I am disposed to favour the latter view.

The decidedly *remittent* character of the fever at its outset—temperature ranging from 101 or 102° in the morning to 104 or 105° in the evening; the well-marked hebdomadal periods, corresponding with the well-known hebdomadal returns of recurrent intermittent and remittent fevers; the moist, broad tongue coated with a whitish fur, rarely, even in the severe cases, becoming painted, red, dark, or dry; the bilious vomiting at the commencement of the attack; its more sudden onset, with greater chilliness; the flat abdomen, with constipation, and absence of gurgling, tympanites, and tenderness over iliac region; the absence of sudamina and rose-coloured spots; the general absence of enteric hemorrhage, and when it does occur its greater profuseness and earlier occurrence (being usually in the second week); the absence of epistaxis, and the decided influence of quinine over the fever in its early stages, often checking it at the end of seven to ten days, all indicate a disease different from typhoid fever.

Nor am I disposed to regard the fevers of our section as *hybrids* of malarial and typhoid fevers. These may be possible, but the evidence of their existence here is wanting.

The gradual and marked changes of our malarial fevers, constantly tending to a typhoid form, are sufficient to account for a continued *malarial* fever, with typhoid symptoms, such as we have here.

Besides, the circumstances under which these cases occur (sporadic, isolated), with none other than the ordinary miasmatic influences to account for their origin, and all absence of evidence of an infectious character, which is now an admitted feature of typhoid fever, point them out as purely malarial.

If, however, it be admitted that the gradual changes in malarial fevers are sufficient to account for a continued fever whose symptoms are so similar to typhoid fever as to puzzle many acute diagnosticians, and cause others to contend for the existence of a fever blending the phenomena of the two; and, moreover, if in some of these cases the characteristic anatomical lesion of typhoid fever appears, the question naturally arises, *where is the difference* between the two? It does not follow, necessarily, because two fevers have striking resemblances, and one of them may occasionally present the anatomical lesion which is considered as characteristic of the other, that they are identical.

We have seen that there is nothing specific in the ulceration of Peyer's glands; that it does not exist in a large proportion of fatal cases of typhoid fever, and is sometimes wholly absent in epidemics (in New York, Janeway, and in Philadelphia, Da Costa); and that it is not peculiar to typhoid fever, but is found in many other diseases.

Dr. Stokes, after noticing the resemblances between typhus and typhoid fevers, and the fact that ulceration of Peyer's glands was frequently seen

in the former, especially in the great epidemic in Ireland in 1826-8, still speaks of them as distinct species of fever. Why, then, may we not have these resemblances between malarial and typhoid fevers, and yet each one retain its identity? They, like all other fevers, are related *generically*, but are of *different species*.

Yet it should be remembered that since the discoveries of Darwin, the *species* are not regarded as so fixed and definite, in the vegetable and animal series, as they once were. Probably, too, the strenuous efforts within the past fifty years at differentiation, and designating diseases by *names* intended to denote *specificness*, has tended too much to overlook their *resemblances*.

If, as already indicated, and which late researches make probable, the causes of the different fevers are to be found in the varieties of the fungi, or algæ, as bacteria, bacilli, or micrococci, may we not, by a reverse deduction, trace them back to a single parent variety or germ? Where these deviations commenced, or when they reached the point of specificness, we may not be able to determine.

From this point they may evolve until they reach specific characteristics, and then run on in the same channel for an indefinite series of years; yet it is within the scope of reasonable hypothesis that any one branch of the series may again subdivide in such a manner as to reproduce or closely approximate some recognized species. This is in strict accord with the principles of evolution as laid down by Darwin in his *Origin of Species*.

Thus may not the cause—the specific germ—of malarial fever, gradually undergo changes until it may, under favourable conditions, produce a type of fever closely resembling typhoid fever, yet preserving its specific identity sufficiently to be classed as malarial? There is nothing inconsistent in the hypothesis, and it accounts well for the hybrid appearance of the phenomena without supposing the joint action of two distinct poisons of a general and specific nature acting at the same time in the same individual.

Dr. Stokes, in his *Lectures on Fever*, speaking of the causes of the change from the “sthenic to the asthenic type of diseases” (p. 12), quotes Dr. Allison as saying:—

“When we reflect on these facts, we cannot think it unlikely, either that *all causes* capable of exciting diseased action in the animal economy, or, more probably, that the liability to diseased actions in the different departments of the animal economy itself, are *subject to variations* which are made known to us only by the variation of the phenomena themselves.”

Again, Dr. Stokes says (p. 39):—

“The attention of physicians has been awakened to the doctrine of the correlation of zymotic diseases (*Zymotic Diseases, their Correlation and Causation*, by A. Wolf, F.R.C.S. Eng. 1872), a doctrine which has been long suspected to be true by practical men. Yet, it may be asked, can we not go a step further, and consider whether essential diseases are not *convertible* as well as correlative?”



Medical research and opinion of the present day tend to the separation rather than to the convertibility of specific diseases, yet it must be admitted that there are many marks of correlation between the essential fevers. Thus, in the great typhus epidemic in Ireland, in 1826-7, Dr. Stokes gives instances in which the two fevers, typhus and typhoid, originated in the same family at the same time under similar circumstances. "One patient may be a maculated typhus; in another there is no eruption; or in another the case is typhoid, or the so-called enteric fever." (p. 51.)

Again (p. 135):—

"That follicular disease of the intestines is commonly met with in typhoid fever, as compared with typhus, may be admitted; but what I want you to perceive is, that there is between them a great generic resemblance. Much has been written to prove that dothinerteritis may be taken as the anatomical character of typhoid fever, and some go so far as to deny the occurrence of ulceration of the intestines in maculated typhus. Yet no man who has observed this fever in an Irish hospital, will subscribe to such a doctrine." "In a very large number of cases, the secondary local disease of the intestine, considered to belong to the typhoid form, was present." (p. 137.) "The tumefaction and ulceration of the ileum were found well marked in a number of cases, so that if those who advocate a different doctrine had been here at the time, and had made dissections in this hospital, they could never have defended this opinion." (p. 143.)

Seeing, then, that fevers are so closely allied generically, and that even when separated into species, there are striking resemblances; that pathological researches do not establish a constant anatomical lesion, which is pathognomonic of any one of them; and that ulceration of Peyer's glands (claimed as characteristic of typhoid fever) is frequently found in other diseases, are we not justified in claiming that a *continued fever*, occurring under circumstances which point to a miasmatic origin, although it may present many of the vital phenomena of the typhoid fever, and occasionally its recognized anatomical lesion, is still *malarial fever*?

There remains, to my mind, but one other explanation of these continued fevers, viz., that they are to be regarded as atypical typhoid fevers, originating *de novo*.

But, admitting the origin, *de novo*, of typhoid fever from animal miasm, and that possibly it may have thus originated in the example I have given (for I have intentionally chosen one suited in some respects to this theory), even the warmest advocate of this view will be unable to bring those sporadic, isolated cases which occur again and again in *malarial*, but otherwise salubrious and healthy country localities, within the rôle of such instances as are claimed as establishing this mode of origin.

The natural conclusion, taking all the facts into consideration, is that they are *malarial fevers* of a typhoid form, using the term typhoid, not in a specific sense, but as indicating a typhoid condition of the system.

## ARTICLE XIII.

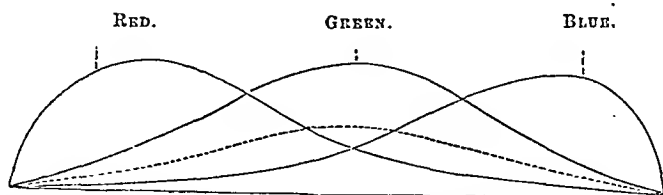
A CASE OF COLOUR-BLINDNESS FOR GREEN. By JAMES L. MINOR, M.D.,  
of New York.

THE extreme infrequency of green-blindness, which is admitted by the followers of the Young-Helmholtz theory, and denied by Herring and his school as being inconsistent with their theory, is sufficient reason for bringing forward this case, which I saw last summer.

A. B., æt. 18, male, consulted me at the New York Eye and Ear Infirmary, saying that he was subject to the constant criticism of his employer concerning mistakes committed in selecting the different shades of *green* in sorting cigars, preparatory to packing in a large tobacco factory in this city. His vision was perfect, and the fundus was normal, but he was unable to select green from certain other colours, while blue and red were quickly and accurately recognized. Holmgren's colour-test was the first one used. He was given a light green skein (I), and told to select skeins of a corresponding colour. Greens, grays, drabs, dark yellows, and light browns were carefully collected and placed together. He was next given a rose-pink coloured skein (IIa), which was accurately matched with skeins of a like colour. And finally a bright red skein (IIb) was given, with which he correctly placed the reds. I now tried Daae's test-chart, which consists of a perforated card, on which are woven ten horizontal rows of coloured worsted, in blocks of three strands each, with seven blocks to the line. Eight out of the ten horizontal lines are made up of blocks of different colour. The remaining two represent, respectively, shades of *green*, from light to dark, and shades of *red* from light to dark. The patient, without hesitation pointed out the red line as containing blocks of the same colour. The green line was passed over, and the line above, which contained greens, drabs, and light browns, was selected as being the only other on the card containing blocks of the same colour.

The result of these examinations is peculiar in that it shows the individual to have been colour-blind, without indicating the variety of colour-blindness, in a way that the tests are supposed to do. The patient was practically green-blind, however inconsistent that fact may be with theory; and to make the two harmonize, as also to explain such phenomena, the Young-Helmholtz theory is most satisfactory. If we recall the diagram used by Helmholtz to illustrate the colour curves, it will be seen that each one of his three primary colours (red, green, and blue) is perceived with a certain admixture of the other two—*i. e.*, a ray of light that gives to us the sensation of blue, acts powerfully upon the blue perceptive elements and to a lesser degree upon those for green and for red; and in a similar

manner when *red* and *green* are perceived, the colour is not strictly a pure one, but is mixed with a small quantity of the other elementary colours. See diagram.



The unbroken lines indicate the curves showing the action of the spectral colours upon the three colour-perceptive elements; and the dotted line, the colour curve for green in the case here related.

In absolute colour-blindness for any one colour, green we will say, the retinal substance with which green is perceived is entirely absent, and the eye is then reduced to dichromatic vision; red and blue will be perceived, while other colours will be recognized as different shades of red and of blue respectively, in proportion to the preponderance of the one or the other colour. My case evidently does not come under this head, for blue and red were accurately recognized, and other colours were not confounded with them. Green and colours containing green had a colour peculiar to themselves, while the power of discriminating these colours one from another did not exist. The green perceptive elements in the retina were so far reduced that they could not be acted upon without setting up at the same time an undue action in the red and the blue perceptive elements which are in greater abundance than in the normal state; and thus a mixed sensation is excited, that furnishes the colour zone in which green and its derivatives are placed by the patient.

233 MADISON AVENUE, NEW YORK, NOV. 1893.

## REVIEWS.

ART. XIV.—*Syphilis*. By V. CORNIL, Professor in the Faculty of Medicine of Paris, and Physician to the Lourcine Hospital. Translated, with notes and additions, by J. HENRY C. SIMES, M.D., Demonstrator of Pathological Histology in the University of Pennsylvania, and Assistant-Surgeon to the Episcopal Hospital, Philadelphia; and J. WILLIAM WHITE, M.D., Lecturer on Venereal Diseases, and Demonstrator of Surgery in the University of Pennsylvania, and Surgeon to the Philadelphia Hospital. 8vo. pp. xvi., 461. Philadelphia: H. C. Lea's Son & Co., 1882.

WE are forcibly reminded by this volume of the man who going to add a porch to his house made it of such a size and excellence as to well-nigh dwarf the original structure. Not that there is anything inferior in the original lectures of M. Cornil, but that the American editors have contributed such large and valuable additions that the book must always be regarded as the composite work of author and editors.

Taken as a whole, it well represents the present position of syphilographers, and from the peculiar fitness of its authors for the execution of their task, must take a high place among authoritative and standard works.

While the book is amply illustrated, there is altogether wanting that pictorial element which has heretofore added so largely to the cost of similar works. The handsomely coloured lithographs to which we refer have never seemed to us to serve any very useful purpose. They have helped to horrify, and at the same time attract, younger students, and have therefore tended to stimulate the sale of the books containing them, but comparatively few of them convey any real instruction. Instead of such pictures there will be found in this book a large number of drawings, presenting the histological appearances of syphilitic lesions. These woodcuts are fairly executed, but not in the least diagrammatic, giving very faithful representations of the actual view obtained by the eye upon looking into the eye-piece of the microscope.

The American editors have altered M. Cornil's arrangement, and have converted his lectures into chapters, which seems to us to be a very desirable change in view of the important and systematic character of the book. In the first chapter M. Cornil defines syphilis as an infectious, contagious, and inoculable disease, of slow evolution, starting with the infecting chancre, and proceeding through the various manifestations known as secondary and tertiary symptoms. The American editors then give a very able and very valuable analysis of Mr. Hutchinson's modification of this definition, with a *résumé* of the lymphatic theory of Dr. Otis, which they regard as the most likely to be true, as certainly presenting the fewest difficulties, and as most consistent with observed facts.

Mr. Hutchinson regards syphilis as a specific febrile disease, like small-

pox or measles, dependent upon contagion, having a period of incubation, of outbreak (primary symptoms), of efflorescence (secondary symptoms), and certain sequelæ (tertiary symptoms). Drs. White and Simes go on to show that while there is a striking analogy perceptible, the resemblance is not precise or accurate. For instance, this theory does not account for the invariable appearance of the primary lesion at the point of inoculation. Nor does the gradual invasion of the system through the lymphatics in syphilis correspond to the complete invasion of the exanthemata. Thus our authors are satisfied that in a certain number of carefully observed cases excision of the primary sore has resulted in complete protection of the system from invasion. Then, the claim of Mr. Hutchinson and many others, that the true syphilitic sore is not auto-inoculable, is not admitted by certain syphilographers, who maintain that if the inoculation is practised during the incubative stage a second true chancre can be produced, and whose claim that second attacks of syphilis are notably more common than are second attacks of any of the exanthemata, would seem to deprive the theory of Hutchinson of one of its principal supports.

The theory preferred by Drs. Simes and White, as most nearly reconciling the difficulties presented by observed facts, although as yet lacking in actual demonstration, is that which regards the lymphatics as the channels by which the disease invades the system and in which its principal manifestations are seated. The infecting body in syphilis seems to be a degraded cell, resembling a white corpuscle, but smaller, which has the property of rapid proliferation, and the well-recognized ability of diseased cells to infect their neighbours. These degraded cells attack the white corpuscles of the blood, and, by preventing their transformation into red corpuscles, produce the well-known syphilitic anæmia. These cells are always found at the point of inoculation, and it is their large number which causes the primary induration of the sore, and by compressing the bloodvessels, produces the dryness of that sore by hindering the transudation of serum, while the abrasion or ulceration of the sore is traceable to the interference by these same crowded cells with the blood-supply of the epidermis. The period of incubation is that during which the proliferation and multiplication of these degraded cells is taking place at the point of inoculation, and during which period the system is uncontaminated, while the interval between the appearance of the initial lesion and that of the secondary symptoms, represents that occupied by the slow passage of these same multiplying cells through the lymphatic channels and glands, producing engorgement and the characteristic enlargement. That the poison of syphilis gains access to the system through the lymphatics has been demonstrated by several observations of Fournier.

The continued growth of these syphilitic cells after they reach the bloodvessels is made to account for the roseolous eruptions and insensitive spots, by their interference with the walls of the vessels, and ultimately with the nerves, by pressure.

Further on these cells escape into the papillæ, and multiplying there produce by pressure the local disturbances which result in the papulo-squamous, the pustular, and the ulcerative syphilides. Meanwhile the lymphatics continue in a state of irritation, and from that, and the consequent obstruction, we have the tertiary gummæ, necroses and ulcerations. By adopting this theory, which has been prominently brought before the profession by Dr. Otis, we have no difficulty in understanding the curative effect of mercury, which induces fatty degeneration in the syphilitic

cells, and their liquefaction later on, by iodide of potassium. Although our authors deem it wise to refrain from final judgment, they hold that the theory is not only attractive, but presents fewer difficulties than any other. As regards the nature of the virus which causes the primary cell disease, and the long train of pathological changes well known in syphilis, we know nothing, nor have experiments in the same line as those of Villemin and Pasteur resulted in any definite advance as yet.

As regards the mode of communication, the view now almost universally held by syphilographers is held by the authors of this volume, that the infection, while ordinarily derived from sexual intercourse, often has its origin from contact of the buccal mucous membrane with a diseased surface, from a common drinking cup, or as in many cases of physicians whose hands have become infected in the course of surgical manipulation. While secondary lesions very often, if indeed they do not generally, convey the disease, its first manifestation is always a true chancre. This we believe to be an invariable rule. Inoculation with the blood of a syphilitic subject has sometimes resulted in producing a chancre, but there seems to be no certain evidence that such a result has followed inoculation with any of the secretions of the body. Of course the number of reliable experiments in this direction is very limited, as the inoculations with the pus of chancroids, or simple venereal ulcers, practised some years since were almost entirely nugatory, and the insertion of true syphilitic virus in a healthy person is a measure which few conscientious physicians will adopt, and which M. Cornil thinks should never be done without the consent of the subject. Indeed we cannot understand how any man, aware of the ravages which may attend this disease, would permit himself to perform the operation whether his subject was willing or not, for we should take it for granted that the consent could only come from ignorance.

However derived, the virus, either from a chancre or a secondary lesion, always produces the infecting chancre after a certain incubation, and the other symptoms are always regularly evolved. The experiments of Diday go to show that tertiary lesions cannot be successfully inoculated.

The very important question, whether when the chancre appears the patient already has syphilis, does not seem to be settled in the mind of M. Cornil, while his American editors seem to be equally in doubt. The doctrine taught for many years, and still maintained by the majority of syphilographers, that during the incubatory stage the system becomes infected, and that the chancre is the first manifestation of that infection, has had doubts thrown upon it of late by the experiments of Auspitz, Paul Unna, and others. The matter is so important as to warrant especial attention. Ricord, as far back as 1845, taught that by destroying the primary sore we could prevent systemic infection, but as M. Cornil points out, that was at a time when the true infecting chancre was confounded with the simple venereal sore or chancroid. Of 23 cases in which Auspitz and Unna practised excision of chancres, 14 escaped general infection, but the remaining 9 had constitutional syphilis. Now in view of the fact taught farther on in this book, and strictly in accord with the observation of most surgeons, that it is impossible to make a positive diagnosis whether a given sore is a true chancre, or only a simple venereal ulcer or chancroid, we fail to see any thing very conclusive in the result of these excisions. When the American editors come to speak of these experiments, as they do in a valuable note, giving a summary of modern opinions, they say :—

"It will thus be seen, that there is great difference of opinion among syphilographers upon this point, but that the weight of authority is against the *probability* of the abortion of syphilis by excising or otherwise destroying the chancre. Our own experiments in this direction are not yet sufficiently numerous to justify generalization; but we may venture to say, that the results thus far obtained appear to favour the theory which regards chancre as a local development and not as necessarily a symptom of general syphilis."

Now when the observations of our authors are "sufficiently numerous to justify generalization" we know none whose opinions will have greater weight with us, but in the mean time we cannot attach much importance to so cautiously worded a statement as that which informs us their few observations "appear to favour the theory." Nor, when we come to examine the summary they present of the opinions of authors of acknowledged reputation, do we think they are justified in claiming "that there is great difference of opinion among syphilographers upon this point."

The authors quoted are Bumstead, Zeissl, Mauriac, Isidor Neumann, Berkeley Hill, Hutchinson, Van Buren and Keyes, Jullien, Belhomme and Martin, Diday, Lee, Kölliker, and Otis, and with the exception of Kölliker every one of them expresses a want of confidence in the practice of excision. Hutchinson indeed "finds it very difficult to believe that absorption of the syphilitic virus is so rapid," but he would act as if the limitation to the seat of inoculation "comprised the first week or ten days after contagion." If he means exposure by the word contagion, the true chancre does not appear within that time, and, as Drs. Simes and White point out, it is in direct opposition to his own exanthematous theory. Otis does not believe in excision, although the procedure is in harmony with his theory. Kölliker alone concludes that in certain cases, which at present cannot be designated with certainty, extirpation of the primary sore serves to prevent general contagion, and that the initial indurated sore is not to be considered as a symptom of complete general infection. Instead of there being "a great difference of opinion among syphilographers upon this point" it seems to us that there exists unusual unanimity of opinion, the only dissentients being Auspitz and Unna, with the cautious statements of Kölliker, and Drs. Simes and White. Although we have thus ventured to criticize the terms employed by these last, their candour in presenting the whole subject is admirable.

It is not our intention to dogmatize upon this point, for the case will not admit of it, nor are the experiences of Auspitz and Unna to be disregarded. It is quite evident that they have had weight with M. Cornil, and that in addition to Kölliker, the confidence with which others rest upon the old theory has been somewhat shaken, while the disposition to look favourably upon the early excision of chancres is very manifest in Drs. White and Simes. The matter is still most emphatically undetermined, and it seems to us more than likely that the universal judgment of the profession will ultimately be adverse to the local theory, as the weight of authority is even now "against the *probability* of the abortion of syphilis by excising or otherwise destroying the chancre."

The time which elapses between exposure and the development of a chancre is variously stated, but there is a manifest inclination among observers of late years to extend this stage of incubation, which according to Jullien seems to be in accord with the apparently decreasing severity of syphilis. While occasionally cases in which the chancre has appeared within one, two, or three days from the date of exposure are observed, the average incubation appears to be about twenty-four days. The

American editors have several times seen an ulcer follow exposure in two or three days, which has been the precursor of constitutional disease, but have never noticed characteristic induration before the seventh day. They think it a safe general rule to assume that a suspected sore is the initial lesion of syphilis when ten days have passed since the last exposure.

Chapter II. is occupied as well with an anatomical description of chancre. We have not space to go into an analysis of the elaborate histological details comprised in this chapter concerning the changes which take place in the epidermis, the derm, the connective tissue, bloodvessels, nerves, and lymphatics. These changes as revealed by the microscope are minutely detailed but do not admit of condensation. We must refer our readers to the work itself, where they will find the appearances made plain by numerous wood-cuts.

Although the work has to do with syphilis, in the third chapter is given a good account of the soft chancre, chaneroid, or simple venereal ulcer. There is none of the sclerosis of vessels which distinguishes the chancre, and the fibrous trabeculae of the derm are broken down, thus accounting for the great differences which mark the progress of the two affections. In fact the appearances in a chaneroid are simply those of inflammatory change. The chaneroid is always an ulcer, while the chancre is a papule, an increase of tissue rather than a destruction of it. For although the surface of a chancre is eroded, it is an erosion of an elevated thickened portion of the derm. The eroded surface is smooth and glazed, being bathed in fluid, and there is very rarely any excavation. The induration which very soon makes its appearance is in certain rare instances absent, and it is this fact that makes the coexistence of slight and painless lymphatic engorgement so valuable a diagnostic sign. According to Fournier in three out of four cases the chancre is single, but in about 25 per cent. multiple chancres exist, varying from three to nineteen in number. This is contrary to a very general view, the solitariness of chancre being often referred to as a diagnostic mark, but the authority of Fournier is too high to admit of dispute. It is noticeable, however, that when there are multiple chancres they all begin at the same time, and are not produced in succession as is the case with chaneroids. M. Cornil concludes that the inoculation of pus from the sore upon the person of the patient will settle the matter, the failure to obtain a decisive result by this method proving that the sore is not a chaneroid, and that its success shows the suspected sore to be a venereal ulcer or soft chancre. From this conclusion Drs. Simes and White dissent and quote the authority of Mr. James R. Lane, who with an experience of seven thousand inoculations maintains that a soft sore may with certain precautions be produced by inserting the secretion of a true chancre. The fact would seem to be that when a chancre is irritated and its surface bathed in pus, inoculating the patient with its secretion produces a sore, a chaneroid, by pus contagion, as it is claimed has followed inoculation with the pus of acne.

The nature of the soft chancre, chaneroid, or simple venereal sore, has always been a matter of more or less discussion, and although by one class of writers consigned, and as we think very properly, to a class of its own, by others its identity with true syphilis has been maintained, while of late years there have been found very competent authorities prepared to deny that it is either syphilitic or in any way specific. Those who still regard the chaneroid as the initial lesion of syphilis account for the absence of constitutional symptoms upon the theory that the free suppuration which



exists eliminates the poison. The majority of surgeons at the present day, however, look upon the chaneroid as resulting from a peculiar specific poison, which is propagated from case to case, and which gives rise to the characteristic appearance and course of such sores. Such, as we have said, is the opinion of the majority of surgeons to-day, and M. Cornil is himself among the number. But the American editors are undecided in their opinion, and seem inclined to side with those who deny that chaneroids are in any way dependent upon a specific cause, but hold that they originate altogether from what they term pus contagion. The reasons for and against this theory are given by the editors in one of their overshadowing insertions, which we briefly summarize for the benefit of our readers.

1. There is no period of incubation, which is true of no other specific disease.
2. One attack does not protect against a recurrence.
3. Sores similar to chaneroids have been produced by inoculation with the contents of acne pustules.
4. The arrangement of the connective tissue in the glans penis, the usual seat of chaneroids, and their rapid development explain the characteristic appearances.
5. Chaneroids elsewhere than on the glans are very rare, which fact accounts for their absence from the fingers of surgeons.
6. Ulcers on the glans from balanitis, when complicated with phimosis, are usually indistinguishable from chaneroids.
7. Competent observers are convinced that they have seen secondary symptoms follow a sore having all the characteristics of a chaneroid, especially when seated on the root of the penis. That such cases occur is claimed to be a clinical fact, and is explained by the unicists on the ground that as all chaneroids originate from syphilitic inoculation, in such cases there has been only an idiosyncratic failure to escape by the elimination of the poison by suppuration, while the dualists account for the anomalous result upon the ground that the chancre has been a mixed one. This last explanation is objected to by the editors as resting upon mere hypothesis, and involving a belief in the frequent occurrence of what must be from its very nature an exceedingly rare accident, though why it should be more rare than the few trustworthy cases observed they do not inform us.
8. While confrontation generally shows the hard sore to have been derived from a hard sore, and a chaneroid to have come from a suppurating sore, in some cases a chaneroid proves to have been derived from a secondary lesion suppurating freely, or even where the woman has only a purulent vaginitis. Such cases the editors think hard to explain by the dualistic theory but readily understood in the light of "pus contagion." The only wonder to us is that if "pus contagion" exists there should not be even more chaneroids than there are.
9. Repeated inoculations with the pus of chaneroids show a progressive enfeeblement of the virus, which is not the case in other specific diseases.
10. Experimentation has proved that when a hard chancre is irritated so as to secrete pus, inoculation with its secretion will produce chaneroids capable of reproduction through a lengthy series.
11. Phagedæna supervening upon a syphilitic sore has been shown to be transmissible by inoculation, and seems to supersede syphilis, no secondary symptoms manifesting themselves. The authorities for this statement are Mr. Lane's lectures and two cases reported by Dr. White in the *Medical News* for February 25th, 1882; the theory being that sometimes pus accidentally acquires intensely irritant and destructive properties of which the chaneroid is only a milder manifestation. Ricord and Fournier have both noticed that phagedæna is not followed by secondary symptoms, and we presume most hospital surgeons have met with cases

confirming the observation. Our own experience has been such that we have long since taken refuge in the conviction that the appearance of secondary symptoms alone enables us to pronounce that a sore is syphilitic. The cases reported by Dr. White would have been regarded by us as virulent and inflamed chaneroids, and we should not have anticipated the appearance of any secondary manifestations. A chanere with true specific induration is one thing, a chaneroid with inflammatory induration is another, and we have to confess that we are compelled in some cases to wait for the revealing hand of time to make a confident diagnosis, but we have no recollection of a case where, with an open bubo and extended ulceration in the groin, constitutional symptoms have shown themselves.

There is what seems to us a great want of correspondence between the fifth reason of the American editors and their seventh. In the first we are told that extra-genital chaneroids are very rare, and that nineteen-twentieths occur upon the glans, yet one of the most cogent arguments advanced in support of the syphilitic origin of chaneroids is contained in the latter, where we are told that syphilis has been seen by many competent observers to "follow a sore having all the characteristics of the chaneroid from its appearance to its cicatrization. This is said to be especially the case in chaneroids at the base of the penis." Now it seems to us that the problem presented to the reader is about as follows: In only one-twentieth of all cases of chaneroid is the sore elsewhere than on the glans penis, and allowing one-half of this twentieth to be at the base of the penis, *many* observers have seen true syphilis to follow a chaneroid sufficiently often to say that such a result "is especially the case in chaneroids at the base of the penis;" when the whole number of cases in this location is not more than  $2\frac{1}{2}$  per cent. of chaneroids. It is not said that a chaneroid at the base of the penis is always followed by constitutional symptoms, but only that such is especially apt to be the case. We cannot but think that the *many* who have seen such cases, and apparently seen them frequently, have, despite their experience and eminence, been deceived, and mistaken chaneres for chaneroids. Especially are we encouraged in this belief by the fact that dualists can explain such cases by the theory of two viruses, which theory, hypothetical though it may be, seems to us the more rational one, and has had the support of too many accomplished observers to be thrown over without more convincing proof than has been advanced by Drs. White and Simes. M. Cornil finds no difficulty in believing in mixed sores, and points out that it is very easy for a person with an infecting chanere, which causes little pain, to have connection with a woman with chaneroids, and to have in consequence both viruses active at the same time.

Some of the dualistic arguments are presented by Drs. Simes and White, who, while showing a very distinct bias, expressly state that they do not presume "to decide a question upon which so many eminent authorities differ." The whole matter is judiciously summed up in the following words of Mr. Lane, of London.

"It is unsafe to predict confidently that any venereal ulcer, even a soft sore attended with suppurating bubo, will entail no further consequences. There is a strong probability that an indurated sore will prove infecting, and there is a probability, though not nearly so strong, that a soft suppurating sore will not, but exceptions to both these general rules will be met with, and there is really no absolute proof of the infecting nature of any given sore, but the fact of infection itself."

We would call especial attention to the admirable and very full consideration bestowed upon the diagnosis of chancre by the American editors, in an addition of some ten pages, based in part upon the paper of Ch. Mauriac. We have not space to do more than express our high appreciation of the value of this addition and of the parallel tables contained in it, by which the distinctive differences existing between venereal and other sores are contrasted.

When we come to the treatment of venereal sores Drs. White and Simmes inform us that they now find it unnecessary to cauterize all chancroids, but treat them in the manner advised by Greenough, of Boston, as they would any non-specific ulcerations, and think the duration of the sore is materially diminished thereby. When, however, the ulcer manifests a disposition to extend, or when there is no inclination to heal, our authors apply fuming nitric acid, or bromine, with the object of establishing a layer of plastic material around the sore, which acts both as a barrier against further extension, and by providing a new and sound material for granulations to build upon. Whether the success of this mode of treatment is owing to the non-specific character of chancroids, or, as Dr. White suggests, to the modification in the virulence of chancroidal virus of late years, we are assured that the treatment has proved most satisfactory during the five years he has practised it. It is noticeable that while expressly disclaiming any preference for iodoform on account of its alterative action, it has been the standard application made, and we should have more abounding confidence in the general-principle treatment of chancroids had resin cerate or oxide of zinc ointment been chiefly relied upon.

The less local treatment infecting chancres receive the better as a general thing, but Dr. White's experience, as already said, inclines him to think that the practice of Auspitz and Unna is worthy of imitation, and he advises the excision of the sore, whenever it presents itself sufficiently early, and is favourably located. Indeed, Dr. White is much less reserved in commending this proceeding than he is when speaking of the theory of syphilitic contagion. In the majority of cases in which he has excised the chancre, some fifteen or twenty in number, syphilis has indeed followed, but in a few cases it seems probable that constitutional disease has been prevented. Knowing that this kind of proof will be met by suspicions of the correctness of his diagnosis, he does not give the cases in detail, but he expresses himself as being thoroughly convinced by them. Indeed, in two cases he has been able by confrontation to prove the accuracy of his diagnosis, the women, upon examination, being found to have mucous patches, while his patients have escaped secondary symptoms, for which the proper period had long since passed at the time this book was published. When the induration is deep, or the sore is so situated as to forbid excision, active cauterization may be resorted to, but with much less prospect of a successful issue. Dr. White has very large opportunities for observation, his thoroughness and painstaking accuracy are of a high order, and his experience has been so satisfactory to himself, that we hope others will be induced to give the plan a fair trial. It is an insignificant operation in itself, and can do no harm. Should the adoption of this method of Auspitz and Unna only save a minority from constitutional infection, the benefit would be very great, while in those where no such favourable result ensued there would be no injury sustained if mercurial treatment were not instituted until the appearance of secondary symptoms.

In Chapter IV. the lymphatic manifestations of syphilis and the chancre are considered. Cornil says, "almost at the same time that the chancre becomes indurated the lymphatic glands connected with it, by means of the lymphatic vessels, become hypertrophied," and it is this indolent engorgement of the lymphatics which furnishes one of the most certain evidences that a given sore which they attend is syphilitic. Yet the chancre also has its bubo, and indeed it is the one to be most dreaded. In syphilis many glands are involved, forming a chain, in chancre a single gland only is generally concerned, but the process going on in that one is active, tending to suppuration, and very prone to form a deep and extensive ulceration, with all the peculiarities residing in it which belong to the chancre. Mere syphilitic glandular engorgement requires no special treatment beyond that which is aimed at the general system, but chancreous buboes urgently require vigorous local treatment of which no mention is made by either Cornil or his editors, and concerning which it would therefore be out of place for us to express the very decided opinions we entertain. Inasmuch as the chancreous bubo is described by Drs. Simes and White, we regret that they have not seen fit to give us their views as to the proper method of treating it.

Although we have gone over but a small portion of this volume the growing length of this review warns us to hasten it to a conclusion. We therefore pass over many chapters, only saying that the various manifestations of secondary syphilis in the different tissues of the body are gone into with a thoroughness which makes the book almost an encyclopædia of syphilitic pathology—until we come to the concluding one which has to do directly with the treatment of syphilis.

M. Cornil is a mercurialist of course, as it seems to us must be every one who has any experience in the treatment of syphilis, but he belongs to the more moderate class. He gives moderately large doses, generally of the protiodide  $\frac{3}{4}$  to 1 grain, and discontinues the remedy immediately upon the cessation of the symptoms. In the deep cutaneous syphilides, which mark the passage from the secondary to the tertiary stage, he combines iodide of potassium with the mercurial. Inunction with mercurial ointment is recommended by M. Cornil when the manifestations are particularly stubborn, but he warns his readers to carefully watch against sudden salivation, which follows the rapid absorption of the ointment. Of subcutaneous injections he speaks approvingly, although he does not speak of practising it himself, thinking that by this method "a certain determined dose can most readily be made to enter the system, and which causes the most immediate modifications in the syphilides." With an emphatic and almost enthusiastic laudation of iodide of potassium, M. Cornil brings his book to a close. There remains a most valuable, tersely written, clear, and definite addition by the American editors. Without denying the tendency of syphilis to recovery, they maintain that it is an established fact, that the careful administration of mercury will increase the probability of cure, and shorten the duration of the active stage. They also favour a continuous rather than an intermittent administration of the drug. Among the theories advanced to account for the undoubted efficacy of mercury in the treatment of syphilis, they prefer the one which attributes that efficacy to its power of promoting distinctive metamorphosis and fatty degeneration exerted against the degraded but rapidly multiplying cells, which in common with Dr. Otis they regard as the underlying cause of syphilis. They think that the undoubted beneficial effects observed by Keyes and

others, to follow the long-continued use of small doses of mercury are better explained by the stimulating effect of that drug upon the lymphatics, thereby leading to improved nutrition and the removal of plastic exudations, rather than by any true tonic property. We have already pointed out the effects which Drs. White and Simes attribute to the degraded cells which are demonstrable in syphilis, and whether they are carriers of an impalpable virus, or some as yet undiscovered germs, those gentlemen think that mercury attacks those cells, hastens their further degeneration, and favours their absorption by the lymphatics stimulated into activity. Inasmuch as it is a well-known fact that newly formed tissues are possessed of less resisting power than the normal structures, only small doses of mercury are needed, and of the efficacy of such our authors very properly think there is abundant clinical proof. They do not think that this theory of Dr. Otis is free from difficulties, but they think fewer attach to it than to any other, and that it is worthy of favourable consideration, as based upon known physiological laws, and as dispensing with vague assertions as to specific, antidotal, and other influences.

The rules of treatment laid down by Drs. Simes and White are substantially as follows: 1. Do not give a mercurial until secondary symptoms appear, as without those symptoms there is no absolute certainty that syphilis is present. 2. When they do appear give protiodide of mercury  $\frac{1}{4}$  to  $\frac{1}{2}$  of a grain, three or four times daily, adding opium if the bowels are disturbed, and prescribe a chlorate of potassium mouth wash as a prophylactic against salivation. 3. Ascertain the proper dose by Keyes's method, which consists in administering the remedy until the mouth is touched, then give just half the quantity; and 4, continue that treatment for eighteen months. 5. Increase the dose with the appearance of new symptoms, and return to the standard upon their subsidence. 6. Use such mild local treatment as may be required. 7. At the end of eighteen months combine iodide of potassium with the mercurial, which should preferably be the bichloride, and continue the mixed treatment for six months longer. 8. At the end of two years discontinue treatment, unless there are positive indications for it, but keep the patient under observation for another year, at the end of which time, should no further manifestations appear, the case may be regarded as cured.

Our estimate of the value of this book is sufficiently evidenced by the length at which we have written upon it, and we have no hesitation in again saying, that it is entitled to take a high rank. It is very noticeable that M. Cornil is almost entirely unacquainted with the labours of English and American surgeons in the same field, but his editors have very fully made up that deficiency. Indeed, these gentlemen are worthy of the highest praise for the manner in which they have done their work. Possessed of unusually facile pens, they have brought the work up to the very latest date, and it would appear as if nothing of importance had escaped them. We have ventured to differ from some of their conclusions, but we have desired to do so modestly, and are fully alive to the fact, that there are yet many things undetermined even in so well studied a subject as syphilis. The interpolation of so many large and important additions is somewhat awkward, and there is some lack of regular arrangement apparent, which, occasionally, leads to repetition, and which would seem to be unavoidable from a book so constructed.

S. A.

ART. XV.—*Who Invented the Obstetrical Forceps? Was the Instrument in use before the time of the Chamberlens?*

*"The Chamberlens and the Midwifery Forceps, Memorials of the Family and an Essay on the Invention of the Instrument,"* by J. H. AVELING, M.D., F.S.A. 8vo. pp. 230. London: J. & A. Churehill, 1882.

THE volume under review, is the result of ten years of earnest search on the part of its author, who has evidently spared no pains to make his work thorough and complete. We can fully appreciate such labour, and have no doubt, that aside from its tediousness, it at times afforded Dr. Aveling much real pleasure, especially when he unravelled the mystery of the three Peters and two Hughs, and discovered who was *the Peter* that invented the forceps, and that he was not the Peter to whom the honour has generally been awarded. The Chamberlens, in whose family the secret of the fenestrated and adjustable obstetrical forceps was kept for four generations, consisted of seven "men-midwives," viz.: Peter I., Peter II., Peter III., Hugh I., Paul, John, and Hugh II., to whom the exclusive use of the instrument was a mine of wealth. We propose to give a *résumé* of the work under review, so as to present the leading points of interest in the lives of these seven men, the descendants of William Chambrélein,<sup>1</sup> and their connection with the use of the instrument in their practice of obstetrics, and to examine the historical claims setting forth its much earlier existence.

1. *William "Chambrélein,"* the progenitor of the family in England, was a Huguenot, who with his wife Genevieve and three children, Pierre, Simon, and Jeanne, left Paris in the year 1569, to escape the persecutions under Charles IX., and sailed over from France to England, landing at Southampton, where his name is found recorded under date of July 3d of that year, in the register of the church of St. Julian. A fourth child, Jacques, was born soon after their arrival; and in 1572 a fifth, also a son, who, strange to say, and to the confusion of his subsequent history, was named Peter,<sup>2</sup> whom we shall call Peter II., preferring the numeral distinction for its simplicity. William Chambrélein is presumed from some remarks made by his descendants to have practised medicine, although there does not appear to be any positive evidence on this point. As he was mentioned in 1596 as *the late William*, he died prior to that period.

2. *Peter I.*, or the elder Peter, of William's two sons of the same name, was, as has been stated, born in France, and went to England when a little boy. In one sense he was the Peter the Great of the family, as he is "the uncle" referred to by Smellie as the inventor of the forceps, although overshadowed by the higher position, and greater reputation of Peter III., son of Peter II. his younger brother. Peter I. was not educated as an M.D., but became one of the order of Barber Surgeons, who were not permitted to prescribe medicines under penalty of fine and imprisonment, the violation of which law got him into trouble, and sent

<sup>1</sup> There is reason to believe that the original name of the family was *Chambrélein*, spelled as above, in the old French, and not *Chambellan* (in English *Chamberlain*). We find no less than eleven terminals to the name in history, viz.: *brelein*, *brelan*, *brelen*, *bellan*, *berlaine*, *berlayne*, *berlane*, *berlan*, *berlin*, *bertyn*, and *berlen*. The last was adopted by Peter III., and continued by his descendants.

<sup>2</sup> We know of three families in Philadelphia, having each two brothers of the same name, distinguished only by their middle initials.

him on one occasion for a short time to Newgate. Midwifery was regarded as a surgical work, although requiring a separate license, and the title of "Surgeon and Man-midwife" was a common, but a much less honourable one, than that of Doctor. Peter I. was enrolled as a Barber Surgeon prior to 1598, and appears to have soon acquired a good practice. He seems not to have been able to resist the temptation to prescribe, and was frequently under accusation for doing so. He was known in the profession as "Petrus Chamberlaine Senior," and resided in Mark Lane, London, having removed from Southampton between 1588 and 1596. In 1614 he is recorded as Surgeon to the Queen (Anne), who presented him with a diamond ring; he was also surgeon to Henrietta Maria, wife of Charles I., and attended her in labour in 1628. He died in December, 1631, having resided in England 62 years, and was probably over 70.

3. *Peter II.* or "the younger" was also, as stated, the son of William, and was born on February 8, 1572. Like Peter I. he became a Barber Surgeon, and is presumed to have been admitted to the Company about 1596. He became also a man-midwife, receiving his license from the Bishop of London. Like his elder brother, he was frequently in trouble with the College of Physicians for having administered medicines to his patients, and was fined for so doing. The two brothers were largely dependent for practice upon the midwives of London, who called them in to deliver difficult cases, and with a view to an increased advantage, endeavoured to have them incorporated and made a society, with arrangements for instruction in anatomy and other branches. Peter II. had eight children, the eldest of whom was Peter III., known for distinction as "Dr. Peter," being an M.D. Peter II. died in August, 1626, at the age of 54, five years earlier than his elder brother.

4. *Peter III.*, known usually as "Dr. Peter Chamberlen," was the son of Peter II., and nephew of Peter I., and was born on May 8, 1601. Of the three Peters he is the best known in history, and his likeness has been preserved in an engraving executed in 1658, at the age of 57, and erroneously marked "Paul Chamberlin, M.D." who was at that date a young man of 23. Peter III. had the advantages of a collegiate education at Oxford and Heidelberg, and studied medicine at Padua, graduating at the age of 18. He continued his medical course subsequently at Oxford in 1620, and Cambridge in 1621, and became a Fellow of the College of Physicians of London in 1628, by which time he had already acquired a reputation as a medical practitioner at home and on the Continent. When thirty years of age, he was alone in the secret of the forceps, his father and uncle having died. His reputation became so extended that the Czar of Russia wrote to Charles I., offering to take him into his service, but the doctor declined. He became in the course of his life, Physician Extraordinary to King James and Queen Anne, Charles I. and Queen Mary, Charles II. and Queen Katherine, and to some foreign Princes. Like Peter II., his father, and Peter I., his uncle, he made a futile attempt to incorporate the midwives of London (in 1634), desiring to make use of them for his own advancement and gain, and to be appointed a governor over them. This scheme was resisted on the part of the midwives and the petition was denied him, it being claimed that he had tried through them to monopolize the work of delivery in their difficult cases, and that he was in the habit of making bargains, with unreasonable demands for large fees, before he would undertake to deliver the suffering patient; in fact it was even claimed against him, that parties'

had perished for want of help whilst he was bargaining for a high reward, and this especially among the poor, who found it difficult to meet his unreasonable demands. These charges brought from his pen, in 1647, a defence entitled, "*A voice in Rhama; or the cry of women and children, echoed forth in the compassions of Peter Chamberlen, Doctour in Physick, Fellow of the Colledge of London, and one of his Majesties Physicians Extraordinary,*" in which he sets forth his claims to superiority as a man-midwife on account of the possession of a secret process of delivery, and denies that he was in the habit of charging as had been claimed to his discredit. The following extracts will be found of interest to the profession.

After recounting his own early history and educational advantages, he says :—

"Then fame begot me envie and secret enemies, which mightily increased, when *my father added to me the knowledge of deliveries and cures of women.*" In his defence against the claim of exaction he says: "I seldom bargained beforehand, or not above twentie times when exceedingly animated by some fresh injuries and grosse abuses; although I hold not bargains unlawful, so long as the labourer is worthy of his hire." . . . "I never arrested any for what was due, whether by bargain, promise, or otherwise; although in all abused. I never demanded the full value of the operation, if equally compared with other matters of price, or other great operations of Chyrurgery." . . . "That operation merits £100 as well as other cures or operations, according to the value of lives and estates. Yet for one who hath paid me £10, I have delivered 100 for nothing, and as many for lesse than nothing; such as thought it a point of wisdom to save their purse and pay me with lies and scandalls, insufferable scandalls, and so frequent till they caused me abhor the work itself." . . . "To prevent both discontent on the one side and dishonestie on the other, I resolve (as others use to do, and as they have hitherto falsly reported of me) to afford my labours to none but such as trust me with their money before I trust them with my art, which I shall afford at £10 to any that are reputed worth £1000, and in lesser proportion to such as shall bring with them the testimonie of their Minister and Neighbours of their meaner condition: and if the certifiert rank them among the poor, I shall as freely as ever give them assistance. But if any (except kindred, friends, patients, or Ministers) addresse themselves unto me without former conditions, let them not think it strange if I turn my former affabilities into future denyals, and that I lay my self lesse open to affronts in that kind than formerly." "The Draper is not bound to find cloth for all the naked, because he has enough in his shop, nor yet to afford it at the buyer's price. The Lawyer is not obliged to spend his voice and spirits for all the injured in *forma pauperis*, because he pleads well, and shall be heard. Acts of charitie are more due from kindred than from strangers. When a husband of sufficient means shall not think his wife's or child's life worth £10, I am not bound to bestow that on them which is of more value." . . . "In summe, I am wholly tired out with the injuries, vexations, and losses of the businesse."

Failing in his endeavours to obtain an act incorporating the midwives of London, either under the direction of himself or entirely independent of him, he next turned his attention to the establishment of public and private baths, and the obtaining of an ordinance giving him the exclusive right of making baths and bath-stoves for fourteen years. This ordinance passed the House of Lords in 1649, but was rejected by the House of Commons, after it had been submitted to the College of Physicians and returned with its disapproval. This act created a great deal of discussion, *pro* and *con*, and finally resulted in such a condition of opposition between Dr. Chamberlen and the college that he was at length dismissed from his fellowship, "for repeated acts of contumacy," by a vote of the body, on November 23, 1649.



We next find the Doctor engaged in advocating some wild Utopian ideas for the benefit of his country and its people, and in writing numerous religious papers setting forth his peculiar and changing views upon theological questions. These he disseminated in pamphlet form, and thereby rendered himself unpopular in the community, provoking his opponents to the production of many caustic and ridiculing answers, which have been preserved as curiosities of the times in which he lived. He was also given to disputing in public, and earned the reputation of being a fanatic, if not bordering upon lunacy.

In February, 1661, Dr. Chamberlen received the appointment of Physician-in-Ordinary to King Charles II. In 1665-66 he was busily engaged in endeavouring to secure patents in several countries, giving out that he had a plan by which vessels could be propelled within two points of the wind, if not made to sail full against the wind. He applied through his son Hugh, as he was then in Holland, for a patent from his own country, and received an answer to the effect that, when he demonstrated the possibility of his plan, his petition would be granted. Strange as it may appear, he succeeded in obtaining patents for his "*invention of navigating with all winds, in a straight line*," from France, Venice, and the United Netherlands, without demonstrating the practicability of his idea. Failing through his son, he returned to England and advocated his case in person; and although he positively, as before, declined to exhibit the *sine quâ non*, the government granted him the patent for the time asked, and subsequently enlarged it so as to include the manufacture of coaches, wagons, carts, and ploughs, to be driven by the wind. This whole crazy project, as might be expected, failed; for, although the King and Parliament were willing to let him build the ships, the dupes to aid him with the requisite funds could not be obtained. The reviewer has seen the inception of insanity exhibit itself in a physician, now long resident in an asylum, in a somewhat parallel project, by which he anticipated being able to realize a million of dollars. Dr. Peter Chamberlen appears to have had insane freaks, and then to have recovered from them, although at all times more or less eccentric in his ideas. Had he been of stable intellect, his next project might have been made a success, as it has been since by Isaac Pitman; for he conceived the idea of writing by sound, and obtained a patent on Nov. 8, 1672, for "his new invention of writing and printing true English, whereby better to represent to the eye what the sound doth to the ear, than what is now practised." This, like others of his schemes, seems to have ended in its conception; how he was to carry out the idea by the pen or type remains a mystery.

Dr. Aveling reproduces in his work many of the singular writings of this peculiar, if not at times insane, author, which are curiosities of thought and composition, and reveal the character of the man, and his singular ideas upon religion, political economy, etc. etc. He died on December 22, 1683, at Woodham Mortimer Hall, near Malden, in Essex, England, at the age of 82 years.

This Woodham Mortimer Hall is presented by the author as the frontispiece of his book, and deserves a special notice, as it is intimately connected with the discovery and subsequent revelation of the character of the instruments used by the Chamberlens in their obstetric practice. This residence remained in the possession of the descendants of Peter III. for thirty-two years after his death, or until 1715, and the secret closet containing his instruments was not discovered until almost a century after it was sold by his son Hope, or until 1813, of which more hereafter.

Peter Chamberlen III. was twice married, and had fourteen sons and four daughters, forty-five grandchildren, and eight great-grandchildren; of whom three sons, Hugh, Paul, and John, two daughters, twenty grandchildren, and six great-grandchildren survived him. Hugh, Paul, and John were all obstetricians at the time of their father's death, and the first two were then respectively (about) 53 and 48 years old; John was a little younger.

5. *Hugh Chamberlen I.* was, as stated, the son of Peter III., and, being his first child, is computed to have been born about the year 1630. Although designated by the title of Doctor, no evidence has been discovered of his having received the degree of M.D., and, in fact, little is known of his doings until when he must have attained the age of thirty. He was married on May 28, 1663, and had three sons and a daughter, the eldest son of his own name succeeding him as heir to his secret.

The great obstetrical event of Hugh Chamberlen senior's life was his attempt to deliver a woman in Paris having a deformed pelvis, on August 19, 1670. This woman was a dwarf of 38, who had been in labour eight days, and her waters had been broken a week. Mauriceau, who had her in charge, did not wish to perform the Cæsarean operation, believing that it would be certainly fatal, and hearing of Hugh Chamberlen being in Paris, and knowing of the claims of this family of accoucheurs, invited him to see the case. Hugh expressed surprise that Mauriceau, whom he characterized as the most skilful obstetrician of Paris, was not able to deliver the patient, and promised to do so in "half a quarter of an hour." After labouring more than three hours, only stopping to take breath, he abandoned the case. The woman died in twenty-four hours, and an autopsy showed that the uterus was torn and pierced in several places by his instruments. Chamberlen, according to Mauriceau, had then been six months in Paris, having gone there in the hope of making his fortune, and had proposed to sell his secret mode of delivery for 10,000 crowns. Disgusted with his defeat, he returned in a few days to London, taking with him a copy of Mauriceau's *Midwifery*, which he translated and published in 1672, and the preface of which he evidently designed as an advertisement of his special ability to deliver without hooks, so as to preserve foetal life in difficult cases.

In 1673, Hugh, at the request of his father, was associated with him as Physician-in-Ordinary to King Charles I., and in September, 1661, he received the honour of knighthood. He was admitted a Fellow to the Royal Society in 1685. In a little manual, which he published this same year, his name appears as "Hugh Chamberlain," with no M.D. to it. In 1688, suit for malpractice, in the excessive use of emetics, purgatives, and the lancet, in the case of a pregnant woman, was brought against him before the College of Physicians, and he was fined £10.

For nearly ten years of his life Hugh Chamberlen's attention was given to a project for establishing a Land Bank, *i. e.*, a bank to advance money on the security of landed property, and much of his time was taken up in advocating it by pen and tongue. As first proposed, it was a wild scheme for issuing a superabundant paper currency upon a fractional basis of security; but, as finally granted by Parliament, the bank was less objectionable. In 1699 the whole affair collapsed for want of funds, and Chamberlen retired to Holland, according to one statement, but most likely to Scotland, for from 1700 to 1702 he was advocating the advantages of its union with England, and published a volume on the subject. Where he died and

when, have not been ascertained. He practised his profession for some years in Amsterdam, sold his secret to Roonhuysen, who sold it again to others, and thus it gradually became known in Holland, among those who were willing to pay for the information.

6. *Dr. Paul Chamberlen* was the second son of Peter III., and was born on October 22, 1635. The incidents of his early life are unknown, and where he graduated in medicine has not been ascertained; he was a man-midwife, and used the forceps, and was the inventor of the "anodyne necklace," recommended to be worn by teething children and by women in labour for the diminution of suffering. Paul was, in fact, a complete charlatan, and died probably in 1717, as his will was proved by his widow on December 19th of that year. He left a son of his own name.

7. *Dr. John Chamberlen* was the fourth son of Peter Chamberlen III., and, like his brothers and father, practised midwifery, and possessed the family secret. He is believed to have been an M.D., but where he received his diploma is unknown. He died probably at the close of 1699, as his will was proved by his widow on January 6, 1700.

8. *Hugh Chamberlen II.* was the eldest son of Hugh Chamberlen I., and was born in 1664. He took his degree of A.M. in Trinity College, Cambridge, in 1683, and graduated in medicine on October 8, 1689. On April 2d, 1694, he was admitted a Fellow of the College of Physicians, London, and was subsequently elected a Censor in 1707, 1719, and 1721; but his health failing, he was obliged to resign the position in 1722. He died of gout in the stomach on June 22, 1728, at the age of 64, having long been an invalid.

Dr. Hugh II. lived in a fashionable street in London, was a gentleman in his instincts and habits; married into influential families, having had three wives, and practised among the higher classes, chief of which was the family of John Sheffield, Duke of Buckingham, who with his Duchess held him in high esteem, so much so that he spent his last days at Buckingham House, was buried from it, and the Duke erected to his memory, in Westminster Abbey, a handsome cenotaph, upon which is inscribed a long eulogium setting forth his talents and virtues, prepared by another warm friend and admirer, Bishop Atterbury, of Rochester. The Doctor had three daughters, two of whom became heads of families of influence, but no sons. Of all the noted members of the Chamberlen succession, he led the most quiet, refined, and uneventful life, being neither a polemic, a noisy philanthropist, a fanatic, or a lunatic. He seems to have enjoyed a reputation as a kind and skilful physician, being particularly commended for his management of obstetric cases, the diseases of children, and the maladies of delicate subjects. He was the last of the Chamberlens to enjoy the exclusive use of the family secret.

*How did the secret of the forceps finally become known?* This is a question of much scientific interest, but one which the reviewer after a very careful research, can only answer in a measure. After the signal failure of Hugh Chamberlen I. at Paris, in 1670, already mentioned, and that of his Land Bank in 1699, he settled in Amsterdam, after having been in Scotland, where as stated he published in 1700 and 1702 political papers. The sale of the secret of his forceps to Roonhuysen is generally dated at 1688, which is probably an error, as he was then in England, and for a long time afterward, fully engrossed with practice, and advocating the formation of his Land Bank. After he parted with his secret to relieve his necessities, it was sold and resold as such among the Hollan-

ders for many years. The first revelation of the plan of delivery openly made for the benefit of science and humanity was that of Prof. Palfyn, or Ghent, who being in Paris in 1721, to publish his work on anatomy, exhibited before the Royal Academy of Sciences an arrangement of parallel round-handled non-fenestrated veetes, there amusingly denominated, "*the hands of Palfyn*." The Professor was evidently not fully in the secret; he had obtained the idea, possibly from a midwife,<sup>1</sup> but not having seen the instrument, did not know of the fenestræ, and how to make the blades independent and antagonistic at will; so he bound the handles together, after having introduced the blades separately. Although the idea then became known in France, the real secret was evidently not in the exclusive keeping of the Chamberlens in England at the date given. *The first publication in England which gave pictures of the forceps* was the posthumous work of Mr. William Giffard, surgeon and man-midwife of London, published in 1734, by Mr. Edward Hody. In this work on midwifery, is the report of a case in which he used his "*extractors*" in 1726. To Mr. Edmund Chapman, of South Halstead, Essex, is generally awarded the priority, but his little book of 1733 contains no illustrations, these having been supplied in the second and larger edition of 1735, after the appearance of Giffard's Midwifery, and the paper of Butler, referred to in foot-note No. 1, who condemned him for not having done so. To Chapman, however, is due the credit of having mentioned the kind of instrument which constituted the secret of the Chamberlens, before any one had *openly* published it. In his book of 1733, we find the following: "there are several different sorts of forceps," . . . "all far from being equally proper; and great regard is to be had to their form." . . . "The secret intimated by Dr. Chamberlen" (Hugh I.), "by which his father, two brothers and himself, saved such children as presented with the head, but could not be born with natural pains, was, as is generally believed, if not past all dispute, the use of the forceps, now well known to all the principal men of the profession, both in town and country." Chapman must even then (1733) have somehow been long in the secret, as he says: "For many years my forceps happened to be made of so soft a metal as to bend or give way, or suffer some alteration in their curve. They were made as usual with the screw fixed to one part or side of them. These I used for some years, but they often happening to slip off sideways, as before mentioned, my opinion of the instrument was so much lessened, that for many years after, I used it but seldom, and even not once for the space of ten years." Put all these expressions of time together, and Mr. Chapman must have used the forceps long before the date (1726) given in the case of Mr. Giffard, of London. William Sermon, in his "English Midwife," 1671, in speaking of the delivery of the fœtus after its death, mentions as extractors, "the erotehet, hooks, tongs, and other instruments." Query, what did he mean by the term "*tongs*"? Some have supposed that from this, he may have known of the forceps; but there were instruments then in use for the purpose mentioned, that were quite as well entitled to this name, as the forceps. Had he been at that time in the secret, he would, in all probability, have made capital out of it, in writing his manual for midwives, as it was considered quite legitimate in his day to take every advantage of a discovery, and every physician "was said to have his secret."

<sup>1</sup> The *tire tête*, as Palfyn called his instrument, was afterward claimed as his own by Le Dour, a surgeon of Ypres. It was not known to the world generally until published by Butler in the Edinburgh Med. Essays and Observations for 1733.

Another claimant for the early use of the forceps in England is found in Mr. Drinkwater, surgeon and man-midwife of Brentford, who commenced practice in 1668, and died in 1728, and who left a pair of forceps which came into the possession of Dr. R. W. Johnson, who mentions it in his *Midwifery*, published in 1769. The instrument resembled those of Chapman and Giffard, except that the hooks of the handles were bent outward, as in those of the present day. As Mr. Drinkwater was an octogenarian when he died, it is probable that he had been in the secret for some years. Among the many Chamberlens, it appears that it was impossible to keep the secret a purely family one beyond a certain period. When the last of the Peters died, and his three sons held the secret, there must have been a leak somewhere. Possibly death may have given up a pair of forceps, as in the Drinkwater case.

*The Discovery of the Chamberlen Instruments at Woodham Mortimer Hall, in 1813.*—This has often been described, since Mr. Cansardine presented them to the Royal Medical and Chirurgical Society of London, in 1818, but the account given by Dr. May in 1861, and repeated in Dr. Aveling's book, is the most complete. It appears that in 1813, the house was in the care of Mr. Codd, who, with his wife and her mother, Mrs. Kemball, resided there, the last being on a visit. Mrs. Kemball was in a closet over the entrance porch, and noticing the appearance of a cork or small disk of wood inserted in the floor, and again a second one at a distance, investigated their use, and found them to be covers for screw-heads. This led to the discovery of a trap-door with small sunken hinges, upon the opening of which a cavity between the floor and ceiling was revealed, containing among other articles of the Chamberlens their obstetric instruments, consisting of four pairs of forceps of different patterns, three rectes, three crotchets, and three fillets, formed chiefly of whalebone. Dr. Aveling very naturally concludes that these belonged to the three Peters Chamberlen, the instruments of Dr. Peter's father and uncle having been hidden with his own, during his lifetime or later, to secure the keeping of the secret. To account for there having been four pairs of forceps, he remarks that one was so rudely constructed "as to be scarcely practically useful." A testament found, bore in writing the date of 1695.

As an evidence that Peter III. was not the inventor, Dr. Aveling remarks: "He was gay and extravagant in his early professional life, and had not the keen incentives of hardship and want to sharpen his intellect and whet his invention. Besides, we have evidence that he was very early in life in possession of the secret which gave him a superior position as an obstetrician. The midwives, in their petition against his scheme for incorporating them—an attempt which he made in imitation of his father—spoke of him as being a young man." He was then 33. An anonymous writer at this period said: "His father, for aught I ever heard, was a good honest barber-surgeon, and by his knack in midwifery got plentiful estate, which with *his art he left to this young gentleman.*" By the time he was thirty-three he had first secured a good practice, then lost much of it, besides wasting a large portion of his patrimony. Another evidence that the invention long preceded his day is found in the fact that when his father in 1616, at which date he, the son, was but a boy of 15, appeared before the College of Physicians of London to advocate the passage of the act for incorporating the midwives of the city, the petition for the same having been referred to the College by the King and

Parliament; he, the father, gave offence to that learned body by presuming to claim that *he and his brother* (who were only barber-surgeons), *and none others, excelled in the management of difficult cases of labour*, and he was asked whether, in spite of his boast, "any member of the College would not answer and judge more correctly than any obstetric surgeon whatever."

It is evident that Peter II., who was then 44, must have relied upon some secret advantage known only to himself and Peter I. for this claimed superiority as accoucheurs, or he would not thus have risked their future success in practice, by exciting the ire and jealousy of the Royal College. The fact that he was able at 54 to leave houses and landed property to his heirs shows that he was also able from some cause to secure obstetric practice in spite of the disadvantages under which he must have laboured from professional opposition. It might here be supposed that Peter II. was the inventor of the forceps, and imparted the secret to his elder brother, Peter I., but for the fact already mentioned, that Smellie, who wrote in 1752, gave the credit to the uncle of Peter III., which was of course Peter I., known as "Petrus Senior." The true inventor was then Pierre Chambrelan, who was born in Paris somewhere about the year 1560.

It seems almost incredible at this day that the secret could have been kept for so many years; but it will be noticed by the readers of Dr. Aveling's book that no hint is given by any of the family that they used an instrument, or even ventured to call it by name. Had they ever spoken of *the forceps*, it is not likely that its peculiarity of form and articulation could long have been kept in the family as their exclusive advantage. No doubt the chief point in the invention was but the thought of a moment, after which the instrument might have been brought to much greater perfection but for the fact that the desire for secrecy made it imperative that the mechanical work should be done at home. The grand secret was the means of introducing the blades separately, and then uniting them across each other for action. Had the idea of separate introduction once for a moment entered the mind of Rüeffe in 1554, he would have invented the forceps by changing his own fixed instrument into one of independent blades.

The work of Dr. Aveling is a monument of persevering labour. It contains transcripts of wills, documents, and other writings of a curious nature, which are well worth the attention of those who take an interest in antiquarian matters, whether they are in the medical profession or out of it.

*Were forceps used in the extraction of living fœtuses before the time of the Chamberlens; and if so, when?*

Having carefully examined this subject *de novo*, I am prepared to answer the question in a measure satisfactorily. The claim of priority has been made by obstetrical writers, for three authors, whose cases will be investigated, commencing with the latest, viz. :—

1. In the original edition of the work by Jakob Rüeff, entitled *De Conceptu et Generatione Hominis*, published in Zurich in 1554, we find a wood-cut, representing a pair of forceps, which some have presumed were designed to grasp the fetal head and deliver a living child. This instrument resembled a pair of lithotomy forceps, and was evidently a cranio-elast. The blades were riveted together at the joint. were long, slightly curved and hollowed, and devoid of serratures. Such an instrument could

not possibly be introduced, so as to include within its grasp the foetal head. In fact, Rüeff distinctly states, that it was intended to be used upon the dead foetus.

2. In the work of Albucassis (Kalaf-Ebn-Abbas-Abu'l-Kasem), are pictures of two pairs of long pincers, having semiannular jaws; one pair armed with teeth, the other plain. The latter has been claimed to have been designed to seize the head of and deliver a living child; but a careful examination of its form, mechanism, and proportions, will show that it could only have been used as a craniotomy forceps. With a fixed joint, such an instrument could never be introduced so as to grasp the head; in fact, Albucassis calls it "a form of crusher for breaking up the head of the foetus." Abu'l-Kasem was born at Zehera, near Cordova, in Spain, and is said to have practised for part of his life in Arabia. His book was written in Arabic, and contains a large surgical armamentarium, among which are the forceps named. He does not appear to have heard of the form of forceps spoken of by Avicenna, although conversant with the works of many of his predecessors. According to Sprengel's *History of Medicine*, he died A. D. 1122; other historians have dated his death at 1110.

3. In the work of Avicenna (Al-Hassain-Abou-Ali-Ben-Abdallah-Ebn-Sina), surnamed the "Prince of Medicine," we have, however, the evidence that there was a form of forceps designed to deliver the living foetus. The pattern of this instrument has not been presented, either in the text or an illustration, and we are not informed as to the mode of its introduction; but sufficient, although a very unsatisfactory evidence exists, to show that there was such an extractor in use. Ebn-Sina was born in Arabia, near Bokhara, A. D. 980, and died in 1036 or 1037. He wrote a voluminous work upon general medicine in his native tongue, which was translated into Latin, from which we make the following quotation, which may be found in a number of obstetrical treatises, but without the heading or translation:—

"De regimine ejus cujus partus fit difficilis causa magnitudinis foetus."

"Oportet<sup>1</sup> ut inveniatur obstetrix possibilitatem hujusmodi foetus, quare subtilietur in extractione ejus paulatim; tunc si valet illud in eo bene est; et si non liget eum cum margine panni et trahat eum subtiliter valde cum quibusdam attractionibus. Quod si illud non confert administrantur forcepes et extrahatur eum eis. Si vero non confert illud, extrahatur eum incisione, secundum quod facile fit, et regatur regimine foetus mortui."

*Of the management of her, whose delivery is made difficult by reason of the greatness of the foetus.*

It behooves that the midwife shall find out (or effect) a possibility of this kind of foetus, wherefore let it be by little and little (gradually) done finely (finessed) in its extraction; then if that is effective in him, it is well; and, if not, let her tie him with the edge of a cloth (head-band or fillet) and draw him lightly, strongly, with certain drawing together. But if that is not efficient, let forceps be employed (hand to hand) and let him be drawn out with them. If, indeed, that is not efficient, let him be drawn out with incision, after which it is done easily, and let it be managed by the rule of the dead foetus.

This is a literal rendering of the Latin, which may be expressed in fair English thus:—

<sup>1</sup> Canon Medicinæ, Lib. III. Fen. 21, Tract. 2, cap. 28, p. 932, edition of 1595, in 1 volume; "Juuta Avicennæ."

It is necessary for the midwife (there were men-midwives in Arabia then) to discover the possible existence of this kind of (an inordinately large) fœtus; therefore let him (or her) exercise great skill in its gradual delivery; then if this is accomplished, well, and if not, let him (or her) bind it with a fillet and draw carefully and forcibly. If he (or she) does not succeed in this, let the forceps be applied, and let it be delivered by them. If this is not successful, he (or she) must deliver it with an incision, after which it may be done easily; and be governed, as (already explained) in the case of a dead fœtus.

We cannot put upon this paragraph of Avicenna the very liberal construction given to it by Smellie, in the historical introduction of his work upon midwifery. There is nothing in the language to indicate that the fillet is to be thrown around *the head*; the forceps applied to *it*; or *the head* opened and evacuated. *We infer* that the passage treats of a head case, from what the author has already written about, in this section, on midwifery. He has elsewhere treated of presentations of the feet and side, and has given directions for the management of cases having dropsy of the head, chest, and abdomen, and has repeatedly recommended the use of the knife upon the fœtus, for its delivery, when obstructed by its abnormal growth or position. We are to infer then, by negative evidence, that this paragraph treats of the management of the fœtus when presenting by the head, but obstructed in its passage through the pelvis, by reason of its disproportionate size as relating to the latter. The fœtus being of normal form, but too large to be delivered naturally, is to be assisted by the fillet; then by the forceps, if requiring more force; and, lastly, in the event of failure, to have its head *split* open, as already recommended in cases of extremity. What Avicenna wrote upon obstetrics was chiefly a compilation, and the sources from whence he drew, may be readily ascertained; but what he says of the forceps is original, and some have supposed that he contrived the instrument. Be this as it may, we have no evidence that the knowledge of it was ever general in Arabia, or its use long continued. If it ever was employed as the Chamberlens used it, the knowledge of its having been so used, must have died out centuries ago, strange as this may appear. We are disposed to be liberal towards Avicenna in our interpretation of what he has written, but we could wish that he had been so explicit in his language, as to leave no doubt as to his full meaning.

Although we must admit, that in all probability, the Arabians had the ability nearly nine hundred years ago to deliver a fœtus alive, by means of an instrument analogous to the forceps of the Chamberlens, this does not detract from the merit of the member of the family, who restored the lost art, without knowing of its pre-existence. At the present day, the secrecy and monopoly of the use of an instrument so important to human life, would be condemned as devoid of humanity; and the parties keeping the secret would be ostracized as the princes of charlatanry. But in the day of the Chamberlens such conduct was viewed differently, and the discoveries of a physician were regarded as his stock in trade, and were seldom published until age or independence diminished their personal value, or the necessity for concealment. Now everything is changed, and we would regard the seven Chamberlens, if living, as quacks, so long as they kept their process of delivery from the eye of the profession. Paul Chamberlen was for other reasons a charlatan; but all would be, if now living, and keeping their method a secret for the purpose of making



money. Speaking of him, the thought occurs to me, that at the time of his death (1717) the secret was out, and that it must have become known at the time of, or soon after the death of Johu, in 1700. Possibly at his death, his forceps told the story to Chapman and his brethren, who so mysteriously came into the possession of the secret, and who acknowledged the possession of it, for some years, before they published its true character to the world.

R. P. H.

ART. XVI.—*Guy's Hospital Reports*. Edited by H. G. HOWSE, M.D., and FREDERICK TAYLOR, M.D. Third Series, Vol. XXV. 8vo. pp. xviii., 531. London: J. & A. Churchill, 1881.

THE yearly volume of Guy's Reports is ever welcome to the library reading-table. This year's, like its predecessors, comes to us crowded with interesting and instructive materials. We very much miss in the present number many of the older Guy's names, and their absence seems to strike us this year more forcibly than before. In reading the various contributions one cannot fail to notice how strongly the older men have transmitted to their successors the same methods of work, the same mode of thought, as well as the same clearness in expression and teaching. This feature seems to us more noticeable in Guy's Reports than in any of the other London hospitals.

In the first article, which is *On Purpura Hæmorrhagica, accompanying the Growth of Multiple Sarcomata*, Dr. HILTON FAGGE gives the history of six cases, with five autopsies, in all of which multiple new formations were found in various parts of the body; in all of the cases purpuric spots occurred on the surfaces. Dr. Fagge remarks that among the various causes of a purpura attended with hemorrhage from the mucous surfaces there is one which seems to have been left almost unnoticed by writers. It is the rapid development of sarcomatous growths throughout the body generally.

From what he has seen, he says, of the "occasional difficulty of recognizing diffused sarcomatous infiltrations of the bones and periosteum in the dead subject, unless careful search is made for them, I feel some hesitation as to whether such disease may not have been really present in some of the few cases which have been set down, even after an autopsy, as examples of Werlhof's morbus maculosus."

Of the *origin* and *causes* of the development of the morbid condition nothing satisfactory has been pointed out. In at least three of Dr. Fagge's cases the commencement of the disease was attributed by the patient to a chill or to getting wet through. In a fourth case, a cough was among the earliest of the symptoms, but it was probably due to early tubercular disease at the apex of each lung. In the other two cases no prodromal occurrence is noted. The author remarks, "I know that many pathologists would maintain that a neoplasm cannot possibly have its origin in such a cause (chill or wetting); but, for my own part, I must confess that I am not sure of it."

The duration of these cases is comparatively brief, varying from seven days to a few months, and in some of them the interval from the development of the serious symptoms to the fatal issue is strikingly short.

Of the symptoms, the most striking feature which occurred in all of the cases, was the hemorrhage from the mucous membranes and from the viscera, which, in some, was large in amount, and was attended by immediate severe symptoms; for example, from the bowel and the kidney. But other parts and organs also exhibited similar conditions; the mucous membranes of the mouth and nose, and even the conjunctivæ did not escape. This hemorrhage appeared to be due, in all the cases, to the formations of the new growths taking place on or near the mucous surface or in the tissue of the organs from which the blood was discharged. Its occurrence is, therefore, to be looked upon rather as accidental or mechanical, owing to the position of the new formation, than as a symptomatic feature of the multiple growths, irrespective of their site. In other words, there is no evidence from which to draw the inference that multiple sarcomata or other new growths bring about such blood changes that hemorrhage necessarily results, as we find it in scorbutus and similar conditions.

Another conspicuous symptom, which, however, was present in only some of these cases, requires particular mention, viz., the so-called rheumatism, which was ushered in by more or less severe pains, in some cases quite localized, in others diffuse and general. In one or two cases, other symptoms, such as fever and sweating, contributed to give the conditions a rheumatic aspect, and in one case there was a peculiar smelling perspiration. In none of the cases was there any joint affection, and the *post-mortem* examination showed no alterations of these structures.

From what we know of the nature, course, and seat of these and similar pains, it seems evident that the term *rheumatic* is misapplied to them. Although, in some cases, the preliminary exposure to wet and cold may serve as an explanation, still we think that usually the symptom is caused by the new growth, or the lymphatic glands, which are apt to enlarge in its neighbourhood, pressing on the nerve trunks.

The *post-mortem* examination revealed the new formation in nearly all the internal viscera.

The neoplasm, as seen in the viscera, showed many white or pinkish nodules, sometimes succulent, sometimes juiceless. Some appeared tolerably well defined, while others gradually merged into the texture, as if infiltrating it. In the kidney, the new growth involved the pelvis, and this condition undoubtedly gave rise to the blood in the urine. Where the mesenteric glands were involved, or the omental growths were attached to the intestine, ulceration of the mucous membrane of the gut was found.

The tumours in the skin, in some cases, showed as flat purplish spots; in others, they were raised above the surface, indurated and purplish; and, still others, showed a central pale elevation, surrounded by a narrow area of red or purple skin. On section, "they looked exactly as if they consisted of slightly swollen granular masses of adipose tissue, or were minute lymphatic glands, gray and fleshy." The microscope showed the growths generally to be composed of "a highly nucleated small-cell infiltration" (Goodhart), which, in the skin, had "a curious tendency to infiltrate the small lobules of fat, the adipose vesicles being separated from one another, and inclosed each in a kind of capsule of new growth."

The blood, which, in some of the cases, was examined microscopically prior to death, showed no increase of the white corpuscles or other changes which threw any light on the nature of these cases. *Post mortem*, no

alterations were detected; the only change in appearance that is mentioned is that, in one case, the blood presented a chocolate colour. The medulla of the bones, so far as examined, showed no changes.

The author expresses the opinion that one at least, and perhaps a second, of these cases are instances of Hodgkin's disease, and goes on to say that while purpura, epistaxis, and other hemorrhages occur as complications of that disease, they are not among the earliest and most conspicuous symptoms noted.

"Different views may be taken with regard to the relations between sarcomatous growths and purpura. One is that a minute development of sarcomatous tissue, with vessels made up of embryonic cells, occurs at each spot which becomes the seat of an effusion of blood; or, perhaps, the sarcomatous cells, or nuclei, or even leucocytes in an abnormal condition, become lodged in the capillary vessels here and there, and produce softening of their walls after the manner of emboli."

It is probable that both of these views are correct, or rather that each of the conditions described by the author are representative of two stages, a very early and a late one, of the new formation. The early stage of the neoplasm, represented by the flat, red, or purplish spots without induration on the skin and the ecchymoses on the pleura and pericardium, is actually found to be "the sarcomatous cells, etc., lodged in the capillary vessels" after the manner of emboli.

The author advances another view to account for the purpura, the spongy bleeding gums, the epistaxis, etc., viz., that they are the joint results of a profound cachexia or alteration of the blood similar to that of scurvy, splenic leukæmia, etc. It would seem that in these and similar cases where a multiple outburst of tumour-formations takes place, we are almost driven to accept the view that profound blood alterations do exist. In these cases as well as in others, no definite chemical or microscopic changes in the blood have been described—at least not such as are recognized in scurvy or in leukæmia. We may hold the view that a single tumour, for example a carcinoma of the breast, is the necessary precedent of secondary growths in the liver or other organs, and that the primary source of infection is a necessary one in such cases. The primary tumour is the one from which the cells of the secondary growth are derived. But simultaneous multiple growths stand in the same relation to the normal condition that the primary single growth does. The same force which conditions the perversion of the cells in a solitary growth acts for the multiple growths.

Infection may not be the proper word to use in the case of multiple sarcomata, since it may lead to a misapprehension; but, nevertheless, the idea of a general acting force must be brought into view. In splenic leukæmia and in Hodgkin's disease we see an exhibition of similar acting forces as in this group of cases, and while in Hodgkin's disease it often occurs that a certain group of glands are primarily involved, we do not regard these glands as primary tumours which lead to the secondary growths by metastasis.

The paper is an excellent one, and we thank the author, who, by collecting these cases, has rescued the facts from the oblivion in which they were completely immersed. Unfortunately purpura hæmorrhagica does not furnish us with the groundwork on which to form a pathological entity, and in the cases here furnished the post-mortem appearances of the new growths are not entirely similar and homogeneous. We are there-

fore lacking at both ends of the line in the materials from which to form a new class of disease. Nevertheless, however much we may question the appropriateness of the heading under which these cases are grouped, there is every reason to thank any one who has laboured to bring together instances where purpuric spots and other connected phenomena exist simultaneously with, or are caused by, new growths of whatever character occurring in the skin, and also in the internal organs of the body.

Dr. THOMAS STEVENSON, in a brief paper on *Thermometric Scales*, points out the origin and the respective use of the three principal gradations. He alludes to the general ignorance of the history of these modes of mensuration, and acknowledges his indebtedness in great part to S. F. Gray's "The Operative Chemist," a book of a half century ago, and now rarely met with.

Dr. P. HORROCKS, in an article on *Reflex Action in Diagnosis*, states the factors brought into play in reflex action; he then considers the reflex movements produced by the application of stimuli to the skin and certain mucous membranes, and the changes which result in these reflexes by various diseases. Following this discussion comes the consideration of the muscle and tendon reflexes, which are not, as according to Erb's theory, truly reflex acts. It seems, however, that if these phenomena are not truly reflex, nevertheless that the usual apparatus of so-called reflex action must be in a state of health in order that the phenomena should occur.

The author then gives the necessary conditions for the production of these knee, ankle, elbow, and wrist phenomena, and furnishes a list of diseases in which they are absent or exaggerated. Dr. Gowers has recently proposed the name of myotatic contractions for these phenomena.

The author has collected a large group of facts which are essential to the study of nervous diseases, and has placed them in a convenient order for reference. So little comparatively is yet known of the essential anatomical basis on which the discussion of these questions rests that heretofore much wasted effort has been spent on theorizing on clinical observations quite insufficient for their determination.

In an article *On the Rheumatic Diathesis in Childhood*, Dr. JAMES F. GOODHART briefly discusses the question of diathesis and what it is. He disclaims an intention to define the word or the *something* which it represents, but his idea, in brief, is that it is equivalent to a family strain, as the term is understood among breeders. Diathesis seems, therefore, according to Dr. Goodhart, to be merely an equivalent expression to hereditary transmission. Nevertheless, the statement is made that syphilis, the most readily and certainly transmitted of all diseases, is excluded from the diathetic class chiefly because of its easy acquirement.

The object of the paper, however, is to give the evidence which he has collected during three or four years upon the question of the liabilities incurred by children of rheumatic parentage. First he says "a word on the intensity of the rheumatic strain," and "from a large number of inquiries upon this point, it appears to me that there are few diseases which run more in families than it." This statement, though unquestionably a true one, does not seem to us to have as its essential basis the proof of either the diathetic or hereditary nature of the disease. We have histories of families in which every member was of illegitimate origin, and all had suffered from venereal disease. The facts furnish no evidence of heredity or of diathesis.

The liabilities, under the rheumatic diathesis, are considered in respect to acute rheumatism, heart-disease, chorea, headache, night terrors, crises gastriques, nocturnal incontinence of urine, etc. "Acute rheumatism in children is in the majority of cases inherited." "Two-thirds (of the cases in children) have rheumatic antecedents of some sort."

The question of heart-disease in children brings us much closer to the heredity and the diathesis in rheumatic affections, and it is probable that the reality of these conditions can be settled by this method only. The author has collected 137 cases of heart-disease in children; of these, 73 had a rheumatic family history, and 19 of the patients had had rheumatic fever. Two-thirds of these nineteen patients would have also a rheumatic family history. In considering whether a mother may transmit to her offspring something which leads to heart-disease, we have to think in the first place what capability she has of altering the heart valves, and under what circumstances endocardial inflammation is produced in her own heart. First, is there any evidence to believe that endocarditis occurs in the mother apart from the more or less acute manifestations of a rheumatic attack? No. To be sure we know of acute rheumatism having as its initial phenomenon endocarditis, but this inflammation is quickly followed by or accompanied with articular symptoms. We do not know of rheumatic cardiac inflammation or chronic valvular changes as the sole manifestation of rheumatism; it is possible for them to occur, but we have no positive knowledge of the conditions. If the mother does not acquire an acute valvular inflammation or chronic valvular thickenings without acute rheumatism, is she more likely to engender such changes in the fœtus in utero than to herself? Again, No.

To answer the latter question in the affirmative requires us to suppose a vastly greater susceptibility of the fœtal tissue to disease than the adult. We have no proof of this, especially not in respect to the fibrous tissue of the cardiac valves. On the other hand, that a mother suffering from acute rheumatism can communicate acute endocarditis to her unborn offspring we can readily believe. And after an acute intra-uterine endocarditis that the cardiac valves should become greatly deformed we can even more readily understand. During fœtal life the tissue of the heart is softer, and when in a state of increased softness from inflammation the force of the blood-current can easily distort and deform the cardiac valvular apparatus, and even its muscular tissue.

It is probable even that most of the cases of congenital malformation of the heart, especially in patients who attain adult life, can receive their explanation by the action of this and similar causes or diseases. Other cases are doubtless due to lack of development of the fœtus from imperfections of the ovum. In these cases, as well as others, to prove their origin unequivocally, it is necessary to make out something more than a diathesis; we must be distinctly cognizant of the actual presence of the diseasing cause, and that this cause acted on the heart during intra-uterine life. We can readily suppose that a child, whose mother had acute rheumatism during her pregnancy, should suffer from acute endocarditis, but not sufficiently or severely enough to leave behind the traces, the valvular murmurs, by which we are able to recognize the past cardiac disease. That the valves of such a heart are especially liable, nay prone to subsequent inflammation, or even chronic thickening during later life, is only what we are perfectly familiar with in many rheumatic adults.

In respect to chorea, the author states that from his cases, eighty-one

in number, the disease in two-thirds of the instances is found with close rheumatic relations, but he does not think it is always rheumatic by any means. The relationship which the paper shows rheumatism to have to other neurotic diseases is most interesting.

The appendix of cases read in connection with the author's remarks, which we have given in brief, are very valuable, and will afford a basis from which the subsequent study of this question may be pursued as it deserves to be.

Dr. P. H. PYE-SMITH, in a paper on *Alopecia Areata*, discusses the different varieties of loss or absence of hair, but especially that indicated by the title.

He states that, on one occasion only, has he found "some spores and scanty mycelium close to one of the neighbouring hairs," but he is thoroughly in accord with most modern dermatologists, that the presence of a parasite is entirely accidental. "Apart from the microscopical evidence, the naked-eye appearances and natural history of the disease would alone disprove the parasitic hypothesis. The hairs around the affected spot are not swollen at the root, nor brittle in the shaft, but are simply atrophied, like normal hairs which are ready to drop off. There is no evidence of local irritation in the hair-sac. The disease, above all, is not contagious, and is not curable by anti-parasitic treatment.

The disease is more common before the age of thirty than after, and affects both sexes equally. It occurs in persons of all conditions of general health, complexion, and temperament. Second attacks are rare after a first attack.

Such, in brief, is the account which the author furnishes of this disease.

*On the Fatal Termination of Diabetes, with especial reference to the Death by Coma*, is the title of a paper by Dr. FREDERICK TAYLOR, which contains a record of the deaths in Guy's Hospital from diabetes, during eight years, from 1873 to 1880. One hundred and fifty-nine cases of this disease were admitted during this period, of which 43 died. The cause or mode of death in these cases is stated, as follows: Coma, with or without visceral lesions, 26; coma, with renal disease, 3; doubtful cases, 3; various other visceral localizations, principally pulmonary, but no coma, 11.

This summary does not include all the possible causes of death in diabetes, such as fevers, gangrene, apoplexy, malignant disease, etc., but is sufficient in number to indicate that those mentioned are not very common. It shows that the chief causes of death are phthisis, pneumonia, and the train of nervous symptoms usually described as coma. These figures increase very considerably the proportional number of deaths from coma. The proportional increase may result in two ways: first, from this comparatively small number of cases accidentally furnishing a larger number than usual of comatose cases; and, secondly, because this symptom as a cause of death is comparatively a new observation, and, until Kussmaul's description in 1874, almost unnoted. The latter cause acts probably more strongly in increasing the proportion, since we shall find that the older observers of diabetes content themselves with an indefinite description of death by exhaustion, nervous symptoms, and doubtless, also, many put down to apoplexy were cases of suddenly developed coma. Then, too, in many cases of lung diseases, attended at their termination with coma, this symptom, as well as death, has been attributed entirely to the pulmonary lesions, and, doubtless, often without just cause. All of these considerations, if applied to a review of former cases, would increase the proportion of deaths from coma.

The author considers the various theories which have been proposed to account for the outbreak of the symptoms. These may be divided into three groups: *first*, an exhaustion of the nervous centres, coming in the natural course of the disease, or from some accidental occurrence, such as over-exertion; *second*, the accumulation of some effete morbid products, or the formation of new bodies in the blood; *third*, the alteration of the physical conditions of the circulating fluid (blood-thickening).

The second of these theories has received the most attention of late, and it is divided into two branches: *first*, the development of acetone (acetonaemia); and, *second*, lipaemia and fatty embolism of the viscera. Of the first substance, acetone, its presence is not, by any means, constant, and when occurring in small quantities is insufficient to produce the symptoms, so that the mere detection of its smell does not warrant the diagnosis of death from acetonaemia, any more than its presence would justify an unfavourable prognosis.

The question of the uræmic nature of this form of coma naturally falls under this group, but there is little to support the view, even if albuminuria existed simultaneously with it, and in connection with a diminution of the excretion of the urine.

In respect to fatty embolism, the milky state of the blood was present in only two of the cases, showing that while such a condition may produce in diabetes coma, or other nervous phenomena, as it does after fracture, still the majority of cases of diabetic coma cannot be of this origin. The source of the fatty material in diabetes has not been shown with certainty.

That the blood, in certain cases of diabetes, is found, *post-mortem*, in a thickened condition, has been shown by numerous records, and it is supposed that this state was due to the excessive drain of its watery portion. On this supposition Dr. Hilton Fagge founded his attempt to treat these comatose patients by intravenous injections of water and of saline solution. In regard to the theory of this third group, "the only evidence that these cases afford in reference to the blood-thickening is to be found in the results of the treatment attempted." Fagge's first case was partially successful, but all the other cases (six in number), subjected to similar measures, were without result, or, at best, quite temporary improvement.

For the first theory, no facts have been adduced beyond mere generalities, and the bare statement of the comatose condition being due to exhaustion of the nervous centres is without support from any other known condition. No form of nervous exhaustion with which we are familiar numbers among its symptoms coma; on the contrary, all the phenomena attendant on the development of diabetic coma point to a poisoned condition of the blood with close analogies to uræmic coma.

Ebstein, whom the author quotes, has shown recently, in the *Deutsches Archiv*, the changes in the renal epithelium which he found in diabetes. These alterations, consisting of various forms of epithelial necrosis, he considers due to a number of conditions of blood changes which have been discovered in diabetes. These conditions do not coexist necessarily in a single case, though all of them are liable to; many of them have been shown to be capable of producing the alterations of the renal epithelium. The alterations consist partly of a hyaline transformation, partly of a disappearance of the nuclei with breaking up of the protoplasm into lumps. The conditions of the blood capable of producing these alterations are deprivation of water in the blood and tissues, hyperglycaemia, acetonaemia, the presence of acetic acid, alcohol, etc.

"Once produced, this necrosis acts prejudicially by preventing the proper elimination of the poisons which circulate in the blood tissues as a result of the morbid metamorphosis, thus determining a condition analogous to, but not identical with, uræmia. A great accumulation of these poisonous products might exceed the powers of even healthy kidneys to excrete them."

From all the evidence at hand, we may conclude that diabetic coma is not due to one condition solely, but to any one of a number of related conditions, or to a combination of several of them. A necessary precursor of the coma is either a very great accumulation of the poisonous products or a changed kidney which fails to remove them from the blood. That the latter is more prominent, we might almost say essential, seems to be shown now that Ebstein has pointed out the alterations of the renal epithelium. It must be remembered that nearly every case of diabetes shows, post mortem, some change in the kidney. Ordinarily, unless the kidneys are grossly altered or else present some of the conditions with which we are familiar in Bright's disease, they have been considered heretofore as normal, and have been so reported. The alterations in size, which have been looked upon as hypertrophy from overwork, are just such changes as Ebstein's epithelial necrosis would be likely to produce.

There are various predisposing and exciting causes which the author points out, such as age, sex, duration of the disease, treatment, various local lesions, fatigue, which have but a doubtful influence in producing death by coma. The details of the onset of the symptom, and of the occurrence of pain usually referred to the abdomen, are all of great interest in these cases. The summary of symptoms given by Senator, and quoted by the author, is exceedingly good.

"Sometimes suddenly without any premonition, sometimes after a first stage of agitation, with general uneasiness, oppression, anxiety, and pain in the region of the stomach, the patient becomes somnolent, moves about restlessly, generally groaning loudly. The pulse becomes frequent, the arterial tension is low, the breathing is hastened and deep, although there is no impediment in either the upper or lower portions of the respiratory apparatus. The extremities become cool, and even the general temperature of the body falls below the natural, and, finally, death ensues amid the deepest coma, sometimes after the supervention of twitchings."

Dr. PYE-SMITH presents some *Observations on the Various Forms of Superficial Dermatitis, particularly Erythema, Eczema, Psoriasis, Lichen, and Pityriasis Rubra. With Cases.* He discusses principally the classification of certain forms of skin disease.

The next paper is on *Chronic Bright's Disease without Albuminuria*, and formed a thesis presented for the degree of Bachelor of Medicine of the University of Cambridge, June 16, 1881, by Dr. F. A. MAHOMED. The subject of Bright's disease still finds a fruitful field and able cultivators in the seat of its birthplace. The object of this article is to show that not only is the urine in chronic Bright's disease occasionally, or even not infrequently, free from albumen, but to prove that in the earlier stages, and in most cases even in their final stage, the urine from the red granular kidney is most commonly perfectly normal. "More than this, its object is to prove either that chronic Bright's disease is not a renal disease, or else that another disease must be recognized, which constantly precedes and prepares the way for Bright's disease, which may be called arterio-capillary fibrosis, or any other name that may be preferred to it."

After speaking of the various modifications of forms of the kidney in



Bright's disease, he shows "that the changes in the kidney may be arranged under three heads: 1. Epithelial changes: 2. Interstitial cell growth and fibro-hyaline changes; 3. Vascular and perivascular thickenings." "It is with the clinical history of these latter changes that it is proposed to deal at present." Since the changes are in the vascular structures, the cause of the condition must be sought in the vascular system during life. We find it, he suggests, in the increased arterial pressure occurring in all forms of Bright's disease, and this pressure produces directly the vascular alterations. The state of high arterial pressure is therefore to be regarded as an antecedent stage of the vascular alteration, and consequently of granular kidney.

From these considerations, he thinks that "we have to deal with three stages of chronic Bright's disease: First, *the functional stage*, which is limited to the condition of high arterial pressure without organic changes in either the vascular system or the kidneys; second, *chronic Bright's disease without nephritis*, the stage of organic changes in the vascular system and in the kidney (arterio-capillary fibrosis); third, *chronic Bright's disease with nephritis* (cirrhotic kidney and prominent renal symptoms)." It is the second of these stages to which the author devotes attention in this paper, and in it the kidney, to the naked eye, is purely red, more or less granular, the capsule somewhat and perhaps extremely adherent, the cortex atrophied, the arteries thickened, gaping, and prominent, the heart more or less hypertrophied; in some cases the kidney may look perfectly healthy, with perhaps the arteries a little thick. The microscope shows thickening of the *membrana propria* of the tubules, thickened Malpighian capsules, intertubular fibro-hyaline thickening, the arteries thickened by muscular hypertrophy and by fibro-hyaline thickening of the intima and perhaps of the adventitia; the epithelium normal or only a little granular. These kidneys differ in appearance from those of the third stage in not showing gray or yellowish mottling. The third stage has among its symptoms almost invariably albuminuria, and not unfrequently dropsy, which in the second stage are absent. The diagnosis of these kidneys can be made "by the cardio-vascular symptoms alone."

Of the accuracy and substantial reality of the changes here described as occurring in the kidney there does not seem to be a doubt. This interpretation of the facts has met with no support in Germany, and but few English writers have given it their approval. In truth, as it is here stated, nearly the whole theory is original with the author, and while exceedingly valuable in many respects, we do not think that it will become the accepted view for the progress of the changes in Bright's disease. To note only a single point, it seems defective in explaining the initial steps in progressive cardio-vascular changes.

Mr. FRANCIS GALTON, F.R.S., and Dr. MANOMED, present *An Inquiry into the Physiognomy of Phthisis by the Method of "Composite Portraiture,"* in which they attempt to prove or disprove the reality or non-reality of a diathesis, and to ascertain whether "certain physical conformations indicate predispositions to certain diseases."

The method employed was to gather a large number of photographs of persons suffering from phthisis. The limits of the age of patients was fixed between fourteen and forty years. Four hundred and forty-two photographs were secured. From these faces it was sought to obtain the average face by which the physical lineaments of the disease could be

shown. The method pursued is what is known as "composite portraiture," and may be described as a pictorial average, made by exposing a photographic plate to a series of individual negatives in succession an equal fraction of time. Thus, if it required two hundred seconds of exposure to complete a picture, and it was wished to make a composite of ten faces, each negative would be exposed only the tenth part of the whole time, or twenty seconds, and so on.

For the sake of comparison with the phthisical faces one hundred men and women each, taken unselected from hospital patients, were obtained. After great care in selecting similar faces among the phthisical cases in order to obtain the general average face, and where the numbers are sufficiently large, the uniformity of the results as shown in the composite portraits is very noticeable.

We quote the conclusion which was arrived at. "Finally, we may say that our results appear to lend no countenance to the belief that any special type of face predominates among phthisical patients, nor to the generally entertained opinion, that the narrow, ovoid, or 'tubercular' face is more common in phthisis than *among other diseases*. Whether it is more common than among the rest of the healthy population we cannot at present say."

There are five photographic plates appended to the paper, showing forty-eight figures of composite and individual portraits. M. L.

We shall next consider the surgical papers.

MR. CHARLES HIGGINS contributes a paper on *Distension of the Frontal Sinus*. Four cases of this rather unusual affection are detailed. In each of them the trouble manifested itself as a bony prominence immediately above the region of the lachrymal sac. Upon breaking into the tumour with forceps a quantity of more or less viscid fluid escaped, and it was found easy to establish a communication between the sinns and the nasal cavity by the somewhat forcible use of a probe. A drainage-tube was passed through the opening thus made, and retained for a longer or shorter period, resulting in permanent cure in all four cases. Mr. Higgins has made diligent search through very many surgical authorities and finds but slight mention made of similar cases, yet he thinks they cannot be extremely rare, as he has himself seen no less than seven.

R. E. CARRINGTON, M.D., contributes a *Note on the Triangular Ligament of the Urethra*, in which he criticizes the descriptions of this structure, as given in the standard anatomies. Dr. Carrington thinks that the superficial layer of the triangular ligament is a special fascia, which opinion no authority attempts to controvert. "The deep layer is formed by the obturator fascia, which, anteriorly, is found to stretch across the pubic arch and close it." This discussion of the question is minute, and made clear by diagrams, without the aid of which we can hardly hope to make the matter plain to our readers. Nor, indeed, are we able to see that it is a matter of much importance whether the condensed cellular tissue which goes to form the deep layer of the triangular ligament is derived from a pelvic or obturator reflection. It may account for the course taken by various extravasations, but can hardly influence the steps of any surgical procedure.

*A Second Case of Fracture of the Skull, followed by a Collection of Cerebro-Spinal Fluid beneath the Scalp*, is narrated by B. CLEMENT LUCAS, B.S. Mr. Lucas's first case was told in former volumes of these

Reports, and eventually terminated fatally by meningitis, after a long period of apparently complete recovery. This second case was a simple fracture of the frontal bone, occurring in a child two years old, as the result of a fall. After some days, and the subsidence of the primary swelling, a tumour with fluid contents could be made out over the seat of the fracture. This swelling varied in size from day to day, and with the aid of a hypodermic syringe its contents were found to be "a clear, faintly alkaline fluid, with a few small flakes slightly tinged with blood." Two years and seven months had elapsed at the time the report was written, and the tumour had in great part disappeared, while the child was sufficiently well to attend school. All of the cases of this accident thus far reported, from Guy's, four in number, occurred in children, and Mr. Lucas thinks they cannot occur in adults, as the bones then have too great firmness to permit of their being so far driven in without an external wound. Mr. Lucas does not think that the fluid could have been derived from the subarachnoid space, which contains but little, and when irritated pours out lymph, but is decidedly of the opinion that the anterior cornu of the lateral ventricle was wounded. He is induced to hold this view from the fact that in the post-mortem examination of his first case the descending horn of the ventricle was found to have been injured.

Another very interesting article, by the same author is, *On a Remarkable Instance of Hereditary Tendency to the Production of Supernumerary Digits*. The patients who came under Mr. Lucas's notice belonged to a family which had exhibited this tendency through five generations, and whose great-grandmother had among her eighty descendants no fewer than twenty-four who presented abnormalities. Mr. Lucas calls her the great-grandmother, but as there were no less than five generations, it would seem that this remarkable personage was certainly the great-great-grandmother to her great-grandson's children who came under the care of Mr. Lucas. An ingeniously constructed table makes the whole thing very plain, and Mr. Lucas gives the names of the parties, in case other surgeons should come across descendants of this individual, presenting abnormalities. It is certainly a most interesting case in its bearings upon the question of heredity.

*A Case of Osteitis Deformans* is contributed by C. J. SYMONDS, M.S., having been under his observation in the person of a woman, in whom it made its first appearance when she was forty-eight years old. It attacked first the left tibia, then the right. After some years the right arm became the seat of aching pains, which disappeared when the left arm became crooked. The gradually effected distortion of the left arm was unaccompanied with pain, at the same time the right hip became deformed and prominent. At the time of reporting the case the patient was sixty-nine years old; and while there is marked deformity of the left forearm and both legs, her principal trouble has been an ulcer upon one of the latter. She enjoys otherwise tolerably good health. A lithograph is given showing the amount of deformity existing in the left forearm.

A very interesting article is *On Three Cases of Reduction en masse*, by N. DAVIES-COLLEY, M.C. More than in almost any other surgical disorder is instruction to be obtained from the study of individual cases of strangulated hernia, for even the most ripe experience will generally find some peculiarity in each case observed. Mr. Davies-Colley puts on record three cases in point. One of them was an inguinal hernia which went up under taxis, carrying the sac with it, and the continued strangu-

lation was only finally relieved by an extended exploratory incision, which revealed the true state of things and averted the impending fatal result. The other two cases were femoral herniæ, in which an operation was done and the sac opened, and yet the bowel went up not into the peritoneal cavity, but into spaces between the peritonæum and the abdominal walls. The writer of the paper thinks that the occurrence of such cases is to be accounted for on the supposition that the attachments of the sac are unusually loose, and that in attempting to insert the finger as a director under the stricture, it does not go far enough, only the most superficial portion of the stricture is notched, and then with the deeper parts unincised the whole sac yields to pressure, and goes into an extra-peritoneal pouch. He urges that where there is any difficulty in placing the finger fairly within the femoral ring, the large flat director should be used, as more certain to enter the abdominal cavity, and that should the bowel not go up freely, the incision should be extended upwards to Poupart's ligament, and even through that structure if necessary, so that a thorough examination of the parts may be made. He thinks it better to divide and ligate the deep epigastric rather than to run the risk of cases terminating as did two of those he reports. The paper is valuable, and should be carefully read. It seems to us to include a very strong argument against doing any operation without opening the sac.

C. H. GOLDING-BIRD, B.A., M.B., has an article *On Chronic Nasal Obstruction*, of which the subdivisions are Ozaena and Adenoid Growths of the Naso-Pharynx. He very properly gives prominence to the scrofulous diathesis which underlies so many cases of ozaena, in which the offensive discharge is not caused by syphilitic disease of the bones. He draws attention to the fact that a certain amount of widening and depression of the nose ensues in long-continued ozaena, dependent upon disease of the mucous membrane, as well as in those cases when there is actual necrosis of bone from syphilis. In these cases, there will also, according to Mr. Golding-Bird's observation, be occasional exfoliation of bone without the presence of a syphilitic taint. The cases narrated are classified as constitutional ozaena, subdivided into *a*, strumous, and *b*, syphilitic, and local ozaena, from blows or other injuries. The second part of the paper, and the more important, is devoted to adenoid growths of the naso-pharynx. Some cases are detailed and the importance of decided local treatment is dwelt upon. This treatment principally consists in removing the growths by scraping, through the mouth. A spoon devised by Mr. Golding-Bird for this purpose is figured.

A paper of very great and permanent value is a *Statistical Account of the Surgical Treatment of Aneurism*, collected from the Hospital Records by CHARLES J. SYMONDS, M.S. From its statistical and analytical character it does not admit of condensation, so that we are compelled to satisfy ourselves with merely noticing one or two points, and must refer those of our readers who are interested in the subject to the paper itself. It consists of an examination of eighty-two cases occurring in Guy's between the years 1866 and 1880. Nor does this large number represent all the cases of aneurism which have presented themselves during this period, but is confined to those in which distinctly surgical treatment was resorted to, even traumatic cases treated by division and ligation being excluded. In thirty-two cases the Hunterian operation was done; in three the distal method was employed, and in three the sac was laid open, and the vessel tied above and below, while in forty-three compression was resorted to. For

the last method a success of 56.89 per cent. is claimed. We notice that previous compression appeared to exert an unfavourable effect when it was ultimately found necessary to resort to the ligature. Yet the reporter thinks that other circumstances than the compression were involved in the question and that a conclusion should not be hastily arrived at. He evidently thinks highly of the antiseptic method of treating the wound, and attributes much of the recent success obtained to it. Mr. Symonds attaches much importance to the early closing of the wound, and he is in accord with the best surgical authorities in that respect, but we cannot but question his conclusion, that in order to obtain speedy union the cat-gut ligature must be used, for we regard a carbolized silk ligature as less likely to slip, and almost as apt to cause no local disturbance. Altogether the paper is important as a record of the work done at Guy's, and fitly closes the surgical portion of a volume that assumes its place in the valuable series which we had feared the internal dissensions of two years since had permanently interrupted.

S. A.

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ART. XVII. — *Diseases of the Rectum and Anus.* By CHARLES B. KELSEY, M.D., Surgeon to St. Paul's Infirmary for Diseases of the Rectum, etc. New York: William Wood & Company, 1882. 8vo. pp. xii., 299. Illustrated.

IT might seem, at first thought, that the disorders of the lower end of the bowel and its adjacent parts had been sufficiently discussed by English and Continental specialists, and that there was no sufficient occasion for a new book of three hundred pages upon this subject. But a careful examination of the work before us shows that it has a good *raison d'être*; and though the author avoids making, in his preface, any formal apology for his production, the simple statement of the reasons why he wrote it is followed by no disappointment as one goes along to the body of the book.

The opening chapter discusses the anatomy and physiology of the rectum and its appendages. This is well done, though most of it at second hand. If the author has opportunity, it would increase the value of his book if he would give us more of the results of his personal dissections and experiments. Possibly, in this case, he might withdraw his apparent endorsement of the opinion that the rectum is intolerant of feces, and that their mere presence excites it to expel them. This opinion is probably founded upon observations made in the dissecting-room; for it certainly would not be suggested by the ordinary experience of the obstetrician, or of one who makes digital examinations of the rectum. To both these it is very exceptional to find a rectum that does not contain a considerable amount of fecal matter, as the author, of course, knows. So that he might speak a little more positively than to say "the normal empty state of the rectum is not universally admitted." His argument against the existence of a third sphincter would be conclusive enough, without the attempts to overthrow assumptions founded directly upon a mistaken notion in regard to the parts below it.

The more practical part of the book begins with the second chapter, which treats of "Congenital Malformations of the Rectum and Anus." In

this the author follows the classification of Papendorf, published a century ago, viz., narrowing; membranous occlusion; absence of anus with blind ending of rectum; presence of anus with blind ending of rectum; absence of anus with open ending of rectum at an abnormal external point; absence of anus with ending of rectum in the bladder, urethra, or vagina; opening of ureters, uterus, or vagina into rectum; total absence of rectum; absence of colon. Some of these various malformations are illustrated by cases. The treatment recommended is immediate operation, preferably that of Amussat (which he spells, p. 39, with two m's), called proctoplasty. This consists in dissecting up to the rectal pouch and opening it, drawing it down and stitching its edges to the skin. If this operation be not feasible, he recommends left inguinal colotomy. Any subsequent attempt to establish an opening in the normal situation, he says, is very dangerous, but gives an account of a very ingenious and successful operation of this sort by Dr. Byrd, of St. Louis.

In Chapter III., which treats of methods of examination and operation in general, the author is manifestly at home. Opening with an injunction to thoroughness and carefulness, which can never be too often repeated or too strongly urged, he illustrates their importance by a case of his own, where a patient had a fistula, a fissure, a polyp, and an eczema of the margin of the anus. A suitable warning against trusting too implicitly to subjective symptoms is given in a way that seems to indicate some failure to appreciate the greater difficulty with which general practitioners can secure direct examination, as compared with specialists. The warning, however, is needed enough, and the advice in regard to carrying out an examination is most excellent. The author's plan of using bougies made of soft red rubber commends itself to the judgment; for, as he remarks, "A patient may easily recover from a false passage made in the urethra, but such will seldom be the case with the rectum, for here, when the instrument leaves the bowel, it enters the peritoneum." His suggestions in regard to the treatment of hemorrhage after operation and attention to the state of the bladder likewise bear the marks of practical experience.

The next chapter considers "Inflammation of the Rectum," comprises but four pages, and is less satisfactory than some of the others.

The fifth chapter takes up the subject of "Abscess and Fistula." This is another good chapter, and full of little hints that are valuable, as, for example, that, after opening an abscess in the earlier stage, "a free hemorrhage from cutaneous vessels is not uncommon, nor, on account of its antiphlogistic action, is it to be deprecated." Since venesection has gone out of vogue, moderate hemorrhages sometimes cause more anxiety and excitement than there is good reason for. This the author evidently appreciates. But he is no advocate of carelessness about bleeding, for he follows the remarks just quoted with a timely caution against opening perirectal abscesses in the surgeon's office and allowing the patient to walk home—lest an artery should start to bleed during the walk. The frequent coexistence of stricture and fistula the author would explain by stating that "a stricture may act as the exciting cause of a deep abscess by the impairment of vitality and nutrition which it causes." This is an unsatisfactory attempt, and it would, at present, be more candid to say the connection is not yet understood. The author lays stress upon the importance of treating abscesses "of the superior pelvi-rectal space" as abscesses, and not as fistulae; that is, of not laying them open into the bowel. This, he says, is a point generally misunderstood in practice.

Fistulæ proper, are well described and well illustrated in this connection. When we look for the author's opinions as to operative interference, we find that he considers "certain cases of Bright's disease, cancer, cardiac and hepatic affections, etc.," as unfit for operation. But we are somewhat disappointed that he is not more specific as to what these "certain cases" are. In regard to phthisical patients he is clear and outspoken enough. "I believe it," he says, "to be a safe rule to operate upon phthisical patients as upon others, being led by the idea that one exhausting disease—phthisis—is better than two—phthisis and fistula." And he adds the comfortable assurance that he has yet to meet the first case which, under suitable and careful general and local treatment, refused to heal after operation. Operating with the elastic ligature, he regards as only a substitute for the use of the knife, which he very much prefers. Of course, he prefers one of his own invention, which, he frankly states, he found, after having it manufactured, exactly resembled those in use in the fourteenth and fifteenth centuries. He shares the opinion of Mr. Smith, of London, that "stuffing" the line of incision is not appropriate, but only such a gentle insertion of lint, or other material, as will suffice to keep the edges apart.

The next chapter is on "Hemorrhoids," at which we can only stop long enough to note that the author prefers the treatment of internal piles by ligation, though he speaks highly of the injections into them of carbolic acid, saying that the more he practises it, the more confidence it inspires him with. We must also note the recommendation for reduction of strangulated piles, which are those usual in the text-books, but which we think might be improved by substituting, in many cases, etherization and immediate reduction for emollients and forty-eight hours' delay.

The seventh chapter treats of "Prolapse," and, among other suggestions, the author states that he has had good results in treating the prolapse attending old internal hemorrhoids with carbolic acid injections. In invaginations, unless milder measures are soon effective, he approves of promptly opening the abdomen and freeing the obstructed intestine.

Passing now by the chapters on non-malignant growths, ulcerations, and strictures of the rectum, we turn to that on "Cancer." Here we find certain conclusions in regard to operations for its removal, drawn from an analysis of one hundred and forty cases, two of which may be epitomized as follows: 1st. Delay in recurrence after excision is rare, and, therefore, the risks involved in removing extensive disease are not justifiable. 2d. The operation is chiefly valuable as a palliative, and as such compares favourably with eolotomy. The author ridicules the reports of French surgeons of patients "*parfaitement guéries*" in a few weeks. This is hardly fair to the French. Only so recently as June, 1882, at a meeting of the Surgical Society of Paris, there was a discussion on the subject in which Trelat, Després, Sée, Verneuil and others took part, and the opinions expressed were of the most moderate and conservative sort. Very few men nowadays would make the slip of speaking of the "cure" of malignant disease, when they ought to speak of "recovery" from an operation for its removal.

The author considers attempts to remove growths high up in the lower bowel, by abdominal incision, as justifiable, and even indorses an exploratory incision when the location is only probable.

The next chapter discusses "Impacted Fæces and Foreign Bodies." Of the latter, a number of curious and more or less instructive accounts are cited. In regard to the former, a remark is made which we cannot

forbear to quote, viz.: "Just as the practitioner has to learn that incontinence of urine may be a sign of a distended and not an empty bladder, so he may have to learn by a disagreeable error in diagnosis, that a diarrhœa is sometimes a result of an overfilled and obstructed rectum."

In the next chapter, the author treats of some disorders of the verge of the anus, on which the only comment we have to make is, that what is already good would be better if the reference to "*eczema marginatum*" (which is a misnomer of Hebra's) were made more exact, and more conformed to the most recent classification of skin diseases.

In the final chapter, he takes up briefly Spasm, Neuralgia, Wounds, Spontaneous Rupture, and Rectal Alimentation. The latter occupies half of the chapter, and forms a useful *addendum* to the matters more proper to the title of the book.

We have, then, a very excellent work here. One not without some minor imperfections, but one which we regard as the best we know of on this subject. It is orderly, comprehensive, and erudite; its style is clear and its tone pleasant. It bears the marks of extensive and scholarly reading, and of a wise use of experience. We have no hesitation in recommending it to all who would know more about this subject than it is possible for general treatises on surgery or medicine to teach.

The value of the subject matter is enhanced by the numerous and excellent illustrations which the book contains, and we congratulate the publishers upon the happy combination of good matter and good form which marks this number of their Library of Standard Medical Authors.

C. W. D.

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ART. XVIII.—*De la Dilatation de l'Estomac.* Par le Dr. H. THIÉBAUT, Chef de Clinique à la Faculté de Médecine de Nancy, Ancien Interne des Hôpitaux, Lauréat de la Faculté. Avec deux planches. Paris: J. B. Baillière et Fils.

*Dilatation of the Stomach.* By Dr. H. THIÉBAUT, etc. 1882.

THIS monograph is somewhat outside of the usual line of medical literature. We are so accustomed to see the subject receive only a short notice of a few pages from some of our writers on the Practice of Medicine, that the essay of 244 pages quite surprises us, and we wonder whether the writer really intended it or not. The monograph opens with an introductory chapter of 46 pages, giving the history of this obscure affection. He shows that its obscurity—rather the obscurity of our knowledge concerning it—is not due to its late recognition by the profession, for Hippocrates and Galen both mention it. The writers of the seventeenth century—Plater, Joden, Fabricius Aquapendente, Spigelius, Baulin, Bonet, who suggested that it might be due to stenosis of the intestine, and Mauchart, who recorded one of the most capacious stomachs on record—all seem to have mentioned it, according to Thiébaud, as a curiosity in medical science rather than as a disease to be treated. Even in the first half of the eighteenth century the extent of the knowledge of its etiology was summed up in these words by Behr: "Of all people, drunkards have the most voluminous stomachs." Van Swieten made a more careful study of the affection, and concluded regarding its etiology: "If the stomach is filled



with a great quantity of food, the two orifices contract spasmodically, and the way of exit is closed. At this time the food and the air swallowed increase in volume on account of the heat. The enlargement of the organ finally becomes so great that the neighbouring organs are pressed upon. When the stomach has undergone a prolonged expansion it loses its contractility, and not only the walls but the orifices are partially paralyzed."<sup>1</sup>

In 1830, J. Frank (*filis*) attempted a classification based entirely on the etiology of the disease. He recognized four varieties of causes: (a) Obstacles to the free exit of the food; (b) Polyphagia; (c) Lax condition and softening of the mucous membrane; (d) Hypernutrition. Naumann, in 1834, gave three causes, rather three varieties: (1) Hypertrophic dilatation. (2) Atrophic dilatation. (3) Dilatation by stenosis. Mr. Clifford Albutt would probably be surprised to see that he is referred to as "Deux Anglais, Clifford et Albntt." Dujardin-Beaumetz is convinced that atonic dyspepsia, flatulent dyspepsia, and dilatation of the stomach, are only different degrees of paresis of the muscular layer, indicating "tétanisants." Damascchio regards it as a morbid state common to a number of gastric affections, and rarely having a separate existence. Germain Sée considers this "ampliation" as an exclusively physical phenomenon, having no relation with dyspepsia: "There is not the least correlation between the two states, dyspepsia being transitory and dilatation permanent." Is he correct in either proposition?

Chapter II. concerns the etiology, microscopy, pathological histology, and the pathogeny of the affection as based on the data furnished by the microscope. The author makes two great classes: (1) *Acute*, and (2) *chronic dilatation*. The acute form is produced in the course of febrile gastric affections, in simple indigestion, and after the ingestion of substances capable of acquiring a large volume in the stomach. It has also been frequently observed after certain traumatism. Kuwberlé, in 1873, noted the frequency of the affection in the course of the peritonitis following ovariectomy, and F. Gross records a case in which it was very marked after an operation for strangulated hernia. Was the stomach dilated in these cases, or was there only the usual tympanites? Twenty-nine illustrative cases are given in this chapter. Case I. was one of strangulated hernia, for which celiotomy was performed; patient died of pulmonary congestion; the stomach at the autopsy had a capacity of three litres. Case III. Old epiploic hernia; reduction without strangulation; reflex vomiting; acute dilatation; gastrorrhœa; choleric state; death. In this case the stomach-tube was frequently used, about two litres of fluid being evacuated each time, but the stomach was almost immediately refilled. This incessant loss produced a choleric state, followed by death. The causes of chronic dilatation of the stomach seem to be very numerous, including: (1) Febrile gastric catarrh. (2) Organic lesions seated at the pylorus. Of these, congenital stenosis is rare: one case is reported by Pauli and one by Landerer. Cancer is most frequent of all these causes; fibrous hypertrophy of the sphincter. The cause of this is generally obscure, but Blot has recorded a case in which it was due to the irritation caused by a foreign body, and Dujardin-Beaumetz one in which it was caused by swallowing sulphuric acid. Hydatid cysts are also to be

<sup>1</sup> The author quotes a case from Morgagni (observed by Valsalva) in which the stomach descended into the hypogastric region. I find, however, that he has mistaken a case of prolapsus for dilatation. In another case Morgagni remarks, of an autopsy, "The stomach was very large, as is usually the case with drunkards."

mentioned in this connection. (3) Spasmodic contractions, or strictures of the pyloric ring. (4) Strictures of the intestine. (5) Adherence of the internal surface of the organ. (6) Immoderate ingestion of food or drinks. (7) Frequent eating. (8) Irritating ingesta. (9) Excessive production of gastric juice and insufficient absorption of the peptones. (10) Dyspepsia. (11) Chronic gastric catarrh. (12) Cancerous infiltration. (13) Destruction of the muscular fibres of the stomach. (14) Muscular asthenia and paralysis. (15) Repeated vomiting. (16) Affections of the liver. (17) Cardiac affections. (18) General diseases, as—(a) Tuberculosis; (b) Alcoholism; (c) Typhoid and puerperal fever; (d) Hysteria; (e) Hypochondriasis; (f) Cerebro-cardiac neurosis. This is a truly formidable array, and, if a “true bill,” one must almost conclude that the normal state of the human stomach is that of chronic dilatation.

After describing the pathological alterations the author discusses them with the view of interpreting their meaning, and determining the pathogeny of dilatation. The most striking facts, he says, are the great changes in the mucous membrane as regarding the etiology of dilatation. He classes the causes, as much as possible, in the order of their etiological importance. (1) Pyloric or duodenal obstructions. (2) Chronic catarrh, simple, or complicated with ulcer; dyspepsia, simple or with acute or chronic gastrorrhœa. (3) Tuberculosis. (4) Frequent eating; polyphagia, polydipsia; indigestible or irritating food. (5) Muscular paresis; pyrexia. (6) Cerebro-spinal and cerebro-gastro-cardiac neuroses. (7) Organic diseases of the liver and heart. (8) Frequently recurring acute dilatations. (9) Repeated and frequent vomiting. (10) Pregnancy. The following are causes, but very rare; (1) Sudden bending or flexure of the duodenum. (2) External adherences of the stomach, and (3) Hysterical convulsions.

The author seems to divide the symptoms of the disease into five sets or classes, the first being the “Functional Disorders in the Digestive Act.” These include disorders of appetite, epigastric pain, nausea, and regurgitation of food, vomiting, several pages being given to this last symptom. He regards it as almost pathognomonic of advanced dilatation when the vomited matters each day consist of food taken the day or several days before.

When the matters vomited or evacuated by the sound are placed in a vessel and left quiet for some time, they form themselves into three layers. The upper, muco-spumous, resembling the *conservæ* seen on the surface of stagnant water; the middle is serous; the lower is grumous and composed of the *débris* of the ingesta. Microscopic examination he regards as very important. Reference is made to a case of dyspepsia (Case 39) with constant sensation of fulness of the stomach, fetid eructations, and copious vomiting. Examination showed striated muscular fibres, for the most part intact; those dissociated were more or less swollen, their transverse striation had disappeared, but the longitudinal striæ were apparent. Of the ingesta of the day previous there remained scarcely recognizable grains of starch and globules of free fat. Sarcinæ were seen, having at their sides a great number of animated vibriones. These results shown by the microscope proved: (1) That the vomiting did not totally expel the contents of the stomach. (2) That the muscular tissue which had remained in the stomach for fourteen hours and perhaps longer, was scarcely altered at all. (3) That the starch swelled up and the fat was emulsified. (4) That, following their stagnation in the stomach, the ingesta began to putrefy. Chemical examination of the vomited matters

in the case referred to showed in 170 c. c., 30 grms. of peptones, and only 0.98 grm. of coagulable albumen in an acid liquid, but having no digestive power. In another case there were only 3.72 grms. of albuminose and 3.90 grms. of albumen, the liquid being very acid, containing no pepsin, and having no action on white of egg. Pepsin being added to this, artificial digestion commenced.

Chemical examination, of liquid evacuated by the stomach tube, by Prof. Ritter, gave the following result :—

Quantity	.	.	.	.	.	.	170 c. c.
Sp. gr.	.	.	.	.	.	.	1025

Acid liquid with no digestive power.

Acidity per 1000 (sulphuric acid valuation) 5.24 grms., 3.15 grms. being inorganic (hydrochloric?)

Coagulable albumen	.	.	.	.	.	0.98 grm.
Peptones	.	.	.	.	.	30.01
Salts	.	.	.	.	.	9.15
Extractive matters	.	.	.	.	.	9.50

Total per 1000	.	.	.	.	.	49.64 grms.
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Beside the vomited matters just described, they sometimes appear simply as aqueous or bloody matters. In one case of watery vomiting as much as 8 or 10 litres were evacuated in twenty-four hours. The author thinks that this is simply due to osmosis from the capillaries. With regard to the intestinal disorders, constipation is most constant, and often very obstinate, though diarrhoea may come on, which, the author seems to think, is generally a consequence of the former affection. It may be due, however, to the irritation produced by the altered and irritating contents of the stomach.

In spite of the disturbance of the gastric function there is not that state of general *malnutrition* which one would suppose to be an inevitable consequence; in many cases the sufferers do not lose flesh, and for this and other reasons the diagnosis may be difficult. According to Küssmaul the urine undergoes a diminution proportional to the amount of the vomiting, this being due to the diminution of the water of the blood. The author, however, has made no special observations on this subject.

Dilatation gives rise to a number of nervous phenomena, as muscular cramps, epileptiform seizures, psychical troubles, and troubles of general sensibility. Küssmaul, with whom the author is inclined to agree, attributes the cramps to the sudden condensation of the blood in the same manner that they are produced in cholera. The epileptiform attacks are not preceded by the initial cry, by the foaming at the mouth, or by the tooth-marks on the tongue. They are the result of a mesocephalic anæmia arising from the serous and sanguineous losses. As regarding the psychical troubles there may be partial or total delirium. Vertigo is a frequent symptom; *vertigo a stomacho læso*. Besides the nervous troubles due to encephalic irritation, troubles of general sensibility occur, subjective sensations more or less painful which torment the sufferers and render them hypochondrical. These are the cases in which errors of diagnosis are most likely to occur, for the sufferer is so much absorbed in these sensations that he forgets to mention the gastric trouble which is the source of all the mischief.

Dilatation of the stomach seems to present itself under one of four different types : (1) that in which there is an absence of functional symptoms ; (2) in which the nervous symptoms predominate ; (3) in which there are intermittent gastric symptoms ; (4) the gastric troubles being habitual.

The author describes a gastrometer, invented by himself, for measuring the size of the dilated stomach. It consists : (1) of an ordinary œsophageal sound of small calibre, number 24 Charrière, graduated, on its exterior surface, in centimetres, this scale having 49 divisions ; (2) a small mass of lead, weighing 6 grams, attached to the extremity of the sound. A silk thread 80 cm. long, attached to the lead, passes through the sound and is attached to an ivory plate at the mouth-end. The whole instrument then is 50 cm. long, the piece of lead measuring 1 cm. When used the external end of the silk thread is held taut so as to keep the weight at the other end in place. The sound is passed into the œsophagus and through the cardiac sphincter. The thread is then relaxed and the weight descends to the greater curvature of the stomach. Then the observer notes the number of centimetres shown by the sound back of the dental arch. To deduce any satisfactory results from this method it is necessary to know the measurement of the normal stomach. The author found this to be, after measuring the stomachs of several cadavers, about 45 cm. From his description it seems that the apparatus is not very exact, but it is more than probable that it may be so modified as to give very definite results.

He believes that the disease is much more frequent than is generally supposed. It seems to be a disease peculiar to adult and middle life, there being very few cases in the very old or very young, and has a constantly progressive tendency. He has seen no case of spontaneous recovery, but does not believe it impossible. As stated before, the diagnosis may be very difficult. In one case pregnancy was first diagnosed, then dropsy ; the autopsy revealed a stomach with a capacity of thirty-four pounds (?). Rilliet had a case in which he was doubtful as to whether there was an abdominal cyst or a tumor of the epiploön. It may also be confounded with a dilated transverse colon, or with a stomach which has assumed the vertical position. We will merely mention the different methods of treatment discussed by the author. He seems to consider thorough and frequent washing out of the stomach as of great importance. Alkaline water should be used. For fetid eructations, sarcinæ, and putridity of the contents of the stomach, salicylate of soda is recommended. Sulphate of soda, bromide of potassium, or Karlsbad salts are indicated when there is an abundant excretion of liquid. Hypodermics of strychnine are recommended on account of the well-known action of this drug in causing a contraction of the whole digestive tube and giving it tone. The induced current seems to have been of great service in many cases, but it must be persevered in. As to the alimentary régime, milk diet is not favourably thought of by the author. He thinks that a heavy midday meal is a great factor in causing dilatation and keeping it up. Fats and leguminous vegetables as well as alcoholic drinks should be forbidden. The following seems to include his whole system of diet : nourish, without fatiguing, with nutritive and easily assimilable food. The author writes as though he understood his subject, and the book is interesting and well worth careful study.

W. G. E.

ART. XIX.—*Transactions of the American Ophthalmological Society. Eighteenth Annual Meeting.* 8vo. pp. 442. New York, 1882.

THE meeting was held at Lake George, and was attended by twenty-five members. The proceedings of the society were commenced by the announcement of the death of one of its honorary members, Dr. Edward Reynolds, of Boston, and a short sketch of his life has been prepared by Dr. Hasket Derby.

Dr. Reynolds, who died at the age of ninety years, was the oldest ophthalmic surgeon in the country, and was one of the founders of the Massachusetts Charitable Eye and Ear Infirmary. He studied abroad under Abernethy, Astley Cooper, and Dupuytren, and, soon after his return, laid the foundation of an extensive practice in ophthalmic surgery by a successful operation for cataract upon his own father. Of late years he had retired from active practice, but was for a long time the leading ophthalmic surgeon of New England.

A case of *Pulsating Vascular Tumour of the Orbit, Eyelid, Temple, and Forehead, treated by Electrolysis*, is reported by Dr. CHAS. STEDMAN BULL, of New York. The patient was a female child a year old, and, with the exception of the tumour, in perfect health. A day or two after birth two small whitish spots had been noticed just above the left eyebrow, which in a few weeks grew red, and about the same time the lid began to swell. When the child was three months old there was a purple tumour as large as its two closed fists involving the upper eyelid, side of nose, forehead, and temple. The eyeball was pushed downward and inward, towards the nose. The main swelling was in the subcutaneous tissue of the lid and eyebrow, and in the orbital tissue, while the skin was the seat of a pure nævus. At the apex of the tumour the skin was very thin, and fluctuated on pressure, and a slight pulsation could be seen. There was also a nævus upon the forearm about the size of a ten-cent piece. The growth of the tumour seemed to be checked for a time by the administration of ergot, but afterwards progressed rapidly.

Between March 28th and April 11th four applications of the electrolytic method were made, under ether, each resulting in slight condensation. The parents then insisted upon removing the child from the hospital. The area of condensation was about an inch and a quarter in diameter, and was increasing slowly.

Dr. W. N. SEELY, of Cincinnati, describes a case of *Atrophied Remains of the Hyaloid System attached to the Posterior Pole of the Lens, and detached from the Papilla*, and states that he can find no record of a similar case. He also reports a case of *Serous Effusion into the Vitreous Humour, causing total temporary loss of Vision, due probably to Malarial Poisoning; recovery*.

A case of *Apparent Disappearance of Iris after Extraction of Cataract*, is reported by Dr. R. J. MCKAY, of Wilmington, Del. The extraction was made by the Graefe method, with irideotomy upwards, and the anterior chamber was immediately filled with blood. When the blood-clot was absorbed, the iris was found to be entirely absent. Several other members mentioned similar cases, and believed the condition to be due to a reduplication of the iris backwards.

Dr. McKay also reports a case of *Non pulsating Exophthalmos, with Recurring Thrombosis of Orbital Veins*. The patient was a married

woman, twenty-eight years of age. A protrusion of the right eye was first noticed when she was ten years of age. It was subject afterwards to temporary exacerbations during her menstrual periods. She had had three children, and the protrusion enlarged considerably during each labour. When first seen by the author, the eye was protruded three-fourths of an inch, and the eyelid, though greatly distended, could not be completely closed. The media were clear, and vision still equalled  $\frac{1}{36}$ . The ball could not be replaced by pressure, and its movements were much restricted. Nodules of distended veins could be felt at the inner angle of the orbit and above the eye. Subsequently vision was lost, and the ophthalmoscope showed optic neuritis, and soon afterwards sloughing of the cornea and general ophthalmitis necessitated extirpation. The orbit seemed filled with a mass of varicose veins.

In a paper on *Hereditary Atrophy of the Optic Nerves*, Dr. WM. F. NORRIS, of Philadelphia, gives a history of this disease affecting one or more members of four generations, and compares it with retinitis pigmentosa. Both affections are frequently hereditary, but while optic atrophy commences after puberty, often in middle life, and cuts off the central vision first, retinitis pigmentosa commences usually in early life, and attacks the periphery of the retina first, frequently leaving the central vision intact for many years. In two cases treated by Dr. Norris the peripheral vision was improved by strychnia, but the central scotoma was not affected.

Dr. WM. S. LITTLE, of Philadelphia, discusses *The Influence of the Faradic Current on the Treatment of Vitreous Opacities*, and reports several cases that improved under its use.

Dr. C. S. MERRILL, of Albany, N. Y., contributes a *Report of a Case of Glioma in a patient twenty-one years of age*. The point of special interest is the age of the patient, as retinal glioma is usually a disease of childhood. The author states that there is no other case on record in which glioma commenced at so advanced an age. The eye was extirpated in October, 1878, and there has been no return of the disease.

Dr. RICHARD H. DERBY, of New York, reports *A Case of Anæsthesia of the Retina, with Concentric Limitation of the Fields of Vision; recovery through Inhalations of Nitrite of Amyl*. The patient was a nervous child eight years of age, with vision reduced to about one-half, and very marked limitation of the fields. The ophthalmoscope showed paleness of the optic disks. "The interesting features in this case are the very marked depreciation of vision, the unusual degree of concentric limitation of the fields, both persisting for two months or more, and the relief following the use of nitrite of amyl, and that relief maintained."

*Case of Remains of the Hyaloid Artery attached to the Crystalline Lens; Anæsthesia of the Retina*, is described by Dr. W. S. LITTLE, of Philadelphia.

Dr. SAMUEL THEOBALD, of Baltimore, reports a case of *Circumscribed Absorption of the Lens apparently of Traumatic Origin, without the remainder of the Lens becoming Opaque*. There was a small dense opacity of the cornea, near its outer margin, to which a tag of the iris was adherent, and behind this point a crescentic notch on the margin of the lens. A narrow rim of opaque lens substance formed the margin of the notch. Drs. Knapp and Kipp thought it possible that this condition might be congenital.

Dr. Theobald also contributes the history of a case in which a frag-

ment of glass remained in the eye, probably in the ciliary body, for ten years without producing serious consequences. The patient presented himself to Dr. T., immediately after the accident, and a minute particle of glass was seen, by oblique illumination, in the anterior chamber. When the pupil was dilated by atropia, the fragment fell behind the iris and was lost. Considerable pain, tenderness of the ciliary region, and slight iritis followed, but lasted only a few days, and there has been no trouble since. Several other members reported instances of the toleration of small foreign bodies in the iris, lens, and retina.

Dr. G. HAY, of Boston, records *A Case of Extensive Hemorrhage between Choroid and Sclerotic*, in which the ophthalmoscopic appearances could not be distinguished from those of intraocular tumour. Drs. Knapp and Pooley referred to similar cases in which the eyes had been extirpated for supposed sarcoma and glioma.

Dr. F. BULLER, of Montreal, Canada, gives a description of a *Peculiar Case of Alopecia of the Eyelids*, accompanied with drawings of microscopic specimens of the diseased cili. The patient was a young lady in good health, and with eyes in other respects perfectly normal. There was not even thickening or inflammation of the edges of the lids, but the upper lashes had been falling out for eighteen months, and decided disfigurement resulted. The most interesting feature of the case "is the presence of a thread-like material wound round the hair, extending from the bulb to a certain distance up the shaft, but never beyond the point of emergence of the hair from its follicle." The author is not satisfied as to the nature of this structure, but suggests that it may be a parasitic growth.

Dr. HENRY D. NOYES, of New York, recommends the use of a convex lens attached to the forefinger by means of a ring, for focal illumination in the removal of foreign bodies from the cornea.

Dr. Noyes also reports *Three Cases of Tumours of the Eye*. I. A smooth firm growth was attached to the conjunctiva, caruncle, inner half of the lower lid and to the periosteum of the inner wall and floor of the orbit. No enlargement of lymphatic glands. The tumour was removed without extirpating the ball; healing was rapid and the sight remained good. Three months and a half after the operation, a swelling appeared in front of the ear and increased rapidly, and coalesced with another which afterwards formed under the ear. There was no sign of a return of the disease in the original situation. The patient, a man 51 years of age, died from exhaustion six months after the operation. In addition to the large growth near the ear, there were small nodules on the forehead, over the parietal bone and at the vertex; all except the second penetrating the bone. That on the forehead perforated the skull, and was found to be adherent to the dura. Nodules were also found in the lungs, pancreas, and brain. The author considers it a case of melanotic sarcoma. II. Epithelial cancer of ocular conjunctiva. removed from a patient seventy-one years of age. No recurrence after two years. III. Choroidal sarcoma. Symptoms of irritation of the other eye, which had been thought to be sympathetic found to be due to hypermetropic astigmatism.

Dr. H. KNAPP, of New York, presents a *Contribution to the Clinical History of Metastatic Irido-Choroiditis*. It is founded upon "The observation of the case of a young lady who, by exposure during menstruation, contracted in the lower part of the abdomen an inflammation, which was followed by transient internal ophthalmia in one eye, and purulent irido-choroiditis, with destruction of the globe in the other." The author be-

lieves that there may be mild cases of metastatic irido-choroiditis which do not lead to destruction of the eye; as mild pyæmic inflammations are known to occur in other organs.

He recommends quinine and the application of cold before panophthalmitis is evidently established; after this period, palliative measures only are indicated.

Dr. G. C. HARLAN, of Philadelphia, describes *A Simple Test for Simulated Monocular Blindness*, and gives several cases in illustration. The patient's attention is concentrated upon the eye with which he admits that he can see, and a strong convex glass is held before it; if he reads fine print at some distance beyond the focus of the glass, vision in the other eye is proved.

Dr. Harlan also reports a case of *Sarcoma of the Lachrymal Gland*. The tumour occupied the position of the upper lid, and was as large as a hen's egg. The eyeball was forced completely out of the orbit, being dislocated forward, downward, and outward, and fixed immovably. Two weeks after the removal of the tumour, the eyeball had resumed nearly its natural position.

The protrusion of the eyeball outward, instead of inward, was considered unique. It was attributed to the great size of the growth, which failed to find room to expand in the position of the lachrymal gland, and, therefore, developed toward the inner side of the orbit. Several other members referred to cases of sarcoma of the lachrymal gland, which, however, are considered rare.

*A Case in which an Attack of Acute Inflammatory Glaucoma was immediately followed by Inflammation of the Brain* is reported by Dr. CHARLES J. KIPP, of Newark, N. J. Iridectomy was performed with partial and temporary relief, but the headache and nausea continued. The pain and inflammation in the eye returned three weeks afterwards, and the other eye was attacked. Iridectomy failed to benefit the second eye. Convulsions, delirium, and coma followed, and the patient died sixty-seven days after the first operation. The author thinks it probable that the cerebral disease existed at the time when the glaucoma first manifested itself, and was the cause, rather than the result of the affection of the eyes. There was no autopsy.

Dr. W. F. MITTENDORF, of New York, records three cases of *Embolism of the Central Artery of the Retina*. All the patients had previously suffered from rheumatism and had valvular disease of the heart. In one, a portion of the retina near the optic disk was supplied by a ciliary artery, a not very infrequent anomaly, and vision was retained in the corresponding part of the field. In all the cases the onset of the disease was sudden and occurred after violent exercise.

Dr. S. B. ST. JOHN, of Hartford, Conn., reports a case of *Double Glaucoma fulminans*, and one of the *Extraction of a piece of Iron from the Lens by means of the Permanent Magnet*. The onset was very sudden and violent in both eyes, in the case of glaucoma, and vision was reduced in each to the ability to count fingers. The second eye was attacked only one week after the commencement of the disease in the first. Iridectomy relieved all the symptoms and restored vision  $\frac{1}{30}$  in one eye and  $\frac{1}{70}$  in the other.

The piece of iron had been in the lens, which had become cataractous, for three months. In the attempt to make an iridectomy, softened lens matter was extruded into the anterior chamber, carrying with it the foreign body, which was removed by means of the Gruening magnet.



Dr. EDWARD G. LORING, of New York, contributes a paper on *Premature Delivery for the Prevention of Blindness*. After citing several cases in illustration of the fact that vision is frequently lost during gestation from albuminurie retinitis or optic atrophy, the author refers to others in which this result has been prevented by premature delivery, either occurring without medical interference, or induced with the object of saving life. He then reports the case of a woman who had had three confinements and had suffered an impairment of vision with each, until sight was entirely gone in one eye and seriously damaged in the other. She became pregnant a fourth time, and, by Dr. Loring's advice, premature delivery was brought on, when the fœtus was three months old. There was no further diminution of vision.

The author concludes that "when a marked deterioration of vision has occurred, with or without ophthalmoscopic changes, and when blindness is threatened, premature delivery is not only justifiable but often demanded;" and that "when a permanent loss of vision has occurred from a preceding pregnancy, premature delivery in a subsequent one, when surrounded by its proper safeguards, is not only justifiable but at times absolutely necessary." From a legal point of view the proceeding is justified by the consideration that in operating to save sight, in such cases, we are also operating to save life, as "given, a pregnant woman with loss of vision, or organic lesion of the retina or optic nerve, as the prominent, or even as the sole symptom, no one can say that a series of convulsions may not set in at any moment which will carry everything before them, including not only the life of the child but also that of the mother."

Dr. Loring also records a *Case of Osteoma of the Conjunctiva*, congenital in its origin; and describes *An Improved Means of Oblique Illumination—a Conical Condenser*, consisting of a convex lens attached to a forehead band by means of an arm, broken at various points by ball-and-socket joints so as to admit of free movement in all directions.

Dr. G. C. HARLAN, of Philadelphia, describes an *Improved Trial Frame*, for test glasses, very much lighter than those in general use. G. C. H.

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ART. XX.—*Chapters in the History of the Insane of the British Isles.*

By DANIEL HACK TUKE, M.D., F.R.C.P., President of the Medico-Psychological Association, etc. 8vo. pp. 548. London, 1882.

THE substance of this volume is expressed in its title, and the eleven chapters into which it is divided, contain a vast amount of information, deeply interesting not only to the psychological student, but to the philanthropist, and also to the legislator, who, of late years, nearly everywhere, and especially in Great Britain and the United States, has been very frequently called on to enact laws for all the dependent classes, and especially for those whom disease has bereft of the use of their reason.

It is, however, only the diligent student, particularly interested in the subject under investigation, that could patiently cull from the many sources referred to, the information condensed in this volume. Commencing with the early medical and superstitious treatment of the insane, the author has collected a mass of records specially interesting, as illustrative

of the ignorance, and the resulting faith of all classes of people in these early days, when there was only the faintest pretence of anything like treatment given to the unfortunate subjects of mental disorders.

The first chapter of our author's work is mainly devoted to a consideration of these forms of superstitious treatment and to that of the administration of medicine which could claim little superiority over those just referred to. During this period, too, gross cruelty was used alike in nearly every part of England, Scotland, and Ireland. At this early time, the most perfect faith was given in the influence of the moon, and so prevalent and fixed has this impression been, that even at the present time, the many terms indicative of this origin, are still common with not a few legal, medical, and literary writers. All through this period too, the healing powers of different wells were held in great repute, that of St. Winifred being specially celebrated. There were also other hardly less famous wells at Struthill in Stirlingshire, at St. Ronans, and on a small island in Lochmaree, besides various others. At the last named indeed, even as late as 1850, individuals were subjected to this form of treatment.

Coming back to England, in the early and middle part of the sixteenth century, the reader will learn of a certain Dr. Borde, distinguished as a writer and a practitioner. One chapter of his book is headed "An order and a dyett for them the whiche be madde and out of their wytte," and in it he gives this counsel, "I do advertyse every man which is madde or lunatycke, or frantyeke, or demonyaeke, to be kept in safegarde in some close house or chamber where there is lytell light; and that we have a keeper the whiche the madde man do feare." Many of his suggestions, however, are not unkind, however peculiar they may have been.

A hundred years after Borde wrote, the first edition of Burton's *Anatomy of Melancholy* was published, in 1621. Burton thought it a medical, as Coke and Hale, his contemporaries thought it a legal fuet, that witchcraft was one of the undoubted causes of insanity. These legal authorities had other distinguished medical men to support them in their views, such as Sir Thomas Browne and Sir Theodore de Mayerne, who had the distinction of being the physieian of five crowned heads, viz., of Henry IV. of France, James I. of England, Anne of Denmark, Charles I. and Charles II. This favoured court physician was truly called a polypharmacist, one of his prescriptions containing as many as twenty-seven ingredients, and his "besoartiek pastills" contained a still greater number, among which was the skull of a stag and of a healthy man who had been executed. The efficacy of many of these prescriptions it may fairly be inferred arose mainly from the fact that their many ingredients had to be collected by the patients, when wandering about the fields.

In the time of James I., the unfortunate insane and epileptics were adjudged to be witches, the punishment for whom was nothing less than death. The belief in witchcraft extended in England from 1541 to 1736, when the laws against it were abolished. "The last judicial murder of a witeh," says Dr. Tuke, "was in 1722."

The modes of punishment continued, however, were shocking, and in the language of our author, we may say :—

"That when the insane were no longer treated in monasteries, or brought to sacred wells, or flogged at 'trees of truth,' they fared no better—nay often, worse—when they were shut up in mad-houses, and crowded into work-houses. They were, too, often under the charge of brutal keepers, were chained to the wall or in their beds, where they lay in dirty straw, and frequently in the depth of winter

without a rag, to cover them. It is difficult to understand why and how they continued to live; why their care-takers did not, except in the case of profitable patients, kill them outright, and why failing this—which would have been a kindness compared with the prolonged tortures to which they were subjected—death did not come sooner to their relief.”

In the second chapter of Dr. Tuke's book we find a detailed account of the origin of Bethlem and St. Luke's. Of the Bethlem of the time of Henry VIII. the title degenerated into Bedlam, or as it is now called the Bethlehem Royal Hospital. Those who only know this great Hospital at the present day with its magnificent arrangements and its grand income, cannot realize what it was fifty years after the death of Henry VIII., “so loathsome as to be unfit for any man to enter.” The new Hospital opened in 1676 was the building in Moorsfield, and it was the first large asylum constructed in England for the sole object of providing for the insane.

No better illustration of the changed condition of the accommodations for the insane in England need be given, than a reference to the copies of prints in Mr. Gardner's collection, as given by Dr. Tuke, the one showing a room in Bethlem Hospital, about the year 1745, with the manacles on the patient, and so many of the painful surroundings, and opposite to it, the luxurious arrangements of one of the wards of the Bethlehem Hospital of the present day. The connection of the Munro family with this hospital is so remarkable as to be worthy of record. It continued from the service of Dr. James Munro, who was elected in 1728 and died in 1752, being succeeded by his son Dr. John Munro, who was attacked with paralysis in 1783, and who had his son Dr. Thomas Munro made his assistant in 1787, and who in 1792 was promoted to be chief physician to Bethlehem, retaining the office till 1816, when his son Dr. Edward Thomas Munro followed him.

The scene of Act III. of the drama of the Royal Hospital of Bethlehem belongs in St. George's Fields; the first stone was laid in 1812, and with a frontage of 594 feet, the building was opened in 1815, but the details of its arrangements were in no way creditable to those to whom had been entrusted the planning of the work, or to the general intelligence of the people of that period.

Owing to the insufficiency of Bethlem Hospital, St. Luke's was established in 1751 by private subscription, and it is worthy of mention that it was here that lectures on mental diseases were first delivered by Dr. Battie, the physician to the hospital, a new building being opened in 1787. Although St. Luke's never acquired the bad name of Bethlem, it was unquestionably far below what, at this day, could be regarded as even tolerable, in its early system of management of its patients.

The third chapter in referring to the eighteenth century asylums, embraces one of the most interesting periods of reform in the management of the insane, including as it does, the history of the foundation of the York Retreat, which with its subsequent management will always be regarded as a prominent feature in the great work which cannot fail to confer undying honour on all who were connected with it.

It was at this time that occurred the freeing of the violent insane from their fetters, at the Bicêtre,—the daring act which gave Pinel his grand title to honour, and which is not less referred to to-day than it was at the time it took place.

At this period William Tuke and his associates of the Society of Friends,

at York, England, had commenced their work not less assiduously or effectively but it was in a much quieter manner. By personal association they demonstrated the importance of treating the most unfortunate of their fellow-beings, as nearly as possible as they would wish to be treated themselves.

In connection with the great work done at York by William Tuke and his friends it may be mentioned in this place that in 1813 a history of the Retreat at York, an unpretending volume, which afterwards became most celebrated, was published by Samuel Tuke, a grandson of the originator of the mild system of treatment, which has just been referred to. In this volume, it may safely be said, will be found detailed substantially most of the principles of treatment which even now are generally recognized as being what all experience has shown to be the proper and successful ones for the management of the insane.

The fourth chapter of the work under notice is mainly made up of a continuation of the history of the exposures at the old York Asylum and various other institutions, and the effect of the mild treatment adopted at the Retreat, and made known by the many visitors to it, and the various writers on the subject. All these exerted a remarkable influence on subsequent legislation, which had been brought about by popular discussions, the appointment of select committees, their careful investigations, and the general circulation of their reports,—Sydney Smith, when writing for the *Edinburgh Review* in 1817, declaring that “the new establishment at York began the great revolution upon this subject.”

It would probably have been better for the insane, if the results of the investigations referred to could now be forgotten, for in much that is written, at the present day, we find them referred to, as being illustrative of the present condition of even the most enlightened countries in regard to their treatment of the insane.

The last chapter alluded to closes with an acknowledgment of the great service rendered to the insane by Lord Shaftesbury during a period of more than fifty years, in devoting himself most intelligently to their best interests, and especially distinguishing himself as Chairman of the Lunacy Board since its formation.

In the fifth chapter we find an interesting history of the reform in the use of mechanical means of restraint, doing ample justice to the noted men who have been most active in securing its abolition, while at the same time giving a very fair *résumé* of the views of those who still believe a certain amount of it, under peculiar circumstances, is for the best interests of the patients. In this chapter, too, is a very just reference to the danger of substituting seclusion in place of mechanical restraint, and to its unfortunate tendencies.

The care of insane criminals—a subject of special interest everywhere—receives proper attention in the sixth chapter of Dr. Tuke's book. The State Criminal Asylum for England is at Broadmoor in Berkshire, four miles from the Braeknell Station and thirty miles from London. It was erected thirty years ago on a fine site, and embraces three hundred acres of land. Of late years escapes from it have been rare, from 1863 to 1877 there being only twenty-three, and during the last three years none. Broadmoor contains as many as five hundred patients, of whom four hundred are men and one hundred women. Dr. Tuke's description of Broadmoor and its whole history, as well as his suggestions in regard to this class of institutions, are exceedingly valuable, and show the interest

taken by the government in this particular institution. The want of such institutions is particularly felt in most of the United States, for nothing is more thoroughly settled, in the view of practical men, than the impropriety of admitting any of this class of patients into ordinary hospitals for the insane. This subject has been fully discussed by the American Association of Hospital Superintendents on many occasions, and there has never been any difference of sentiment in regard to the proper mode of giving care to this class, and the great harm done by their reception into the State hospitals that treat the insane from all positions in the community.

The chapter on Chancery Lunatics is interesting, and the public has seemed to feel specially familiar with their condition from the writings of Dickens and others. The Lord Chancellor's visitors, however, have done a most important work by their personal visitations, and their careful examinations of the manner in which such cases have been treated, not only in private establishments, but at their own homes. Among those who have laboured particularly to their advantage the distinguished Doctor Bucknill deserves special mention.

Attention is drawn in the following chapter to the unfortunate class of idiots and imbeciles, their past history, and various practical suggestions made in regard to what is due to them by the government, while full justice is done to the efforts of Sumner, Woodward, Backus, Howe, and others of our own countrymen.

The ninth chapter is devoted to the early history of the insane in Scotland, and their treatment, which up to a recent period had been of the most discreditable character. The important changes made in most of the Scotch institutions, however, it is only right to say, of late years have been so great as to give them at this time the highest character. The year 1855 proved to be the commencement of a new departure in the action of the government in making provision for the insane. Their condition at that time is represented by Dr. Tuke as being as bad as it could well be. It was at this period that an American lady, whose invaluable labours in her own country are everywhere recognized, visited Scotland, and the results of her work there—her "invasion of Scotland," as it was not inaptly styled by Dr. W. A. F. Browne—led to most important results. Opposed by officials in her investigations, she left the scene of her work, and, taking the night mail to London, she appeared before the Home Secretary on the following day, while the Edinburgh official was "still on the road, quite unconscious that the good lady had already traversed it." The statements made at this interview by Miss Dix produced the desired effect, and a royal commission was promptly appointed, while she was given every facility for making the most thorough investigation of every class of the insane in the country.

The tenth chapter gives a very clear description of the state of things in Ireland from the earliest period up to the present day. Although great improvements have been made, the Lunacy Inquiry Commission, as late as 1879, found in St. Patrick's Hospital a state of things utterly discreditable to the local authorities and far below the general requirements of the age. The efforts to secure abundant Parliamentary grants, so often failing as in England, are carefully detailed, and the ultimate provision is given as a valuable chapter of history, as are abstracts from the reports of the various commissions appointed to inquire into the condition of affairs throughout the country and to suggest remedies therefor.

The eleventh and last chapter is a most interesting record of the progress of psychological medicine during the forty years from 1841 to 1881, from the origin of the British Psychological Association up to the period of its meeting in the latter year, which terminated the service of our author as its presiding officer, and which was the occasion of the admirable address then delivered which forms this chapter. It is full of instruction, and cannot fail to be alluded to as authority on every subject to which it refers. We commend the whole volume which has passed under our notice to the careful perusal, not only of those who are specially devoted to psychological investigations, but to the members of the medical profession generally, who can hardly avoid being interested in the matters that are everywhere discussed with marked ability, and which cannot fail to add to the high character of its eminent author.

Dr. Tuke has the rare distinction of worthily inheriting a name than which for several generations none is better known for important labours in ameliorating the condition of the insane. In direct descent from William Tuke, the originator of the York Retreat, and more nearly connected with the Samuel Tuke to whom the world was indebted for the "description" of that institution so often alluded to, and the influence of which can hardly be overestimated, our author has distinguished himself in his life-work, as a hospital physician, and for his marked liberality, ability, and fairness as critic, editor, and author—the most prominent of his many writings being the *Manual of Psychological Medicine*, prepared by him in conjunction with the able Dr. Bucknill, and which has deservedly passed through several editions.

T. S. K.

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ART. XXI. — *The International Encyclopædia of Surgery: a Systematic Treatise on the Theory and Practice of Surgery, by Authors of various nations.* Edited by JOHN ASHHURST, Jr., M.D. Vol. II. New York: William Wood & Co., 1882.

THE second volume of this work in no way disappoints the expectations raised by the appearance of the first of the series under such favourable auspices. Although an international undertaking, it is none the less a most interesting event in the history of American surgical literature.

The volume opens with a short article on Contusions, by Dr. Hunter McGuire. The article on Wounds is by a writer well known in this country, Mr. Bryant, the author of the work on surgery. After some general remarks on the different kinds of wounds, the process of repair is considered; but this portion of the subject is, as one might expect in a surgeon more at home with the practical part of surgery, somewhat briefly handled. The views on cell action here expressed are chiefly borrowed from Golding Bird, a writer who is, perhaps, not so generally accepted as an authority on this subject as many others who might have been chosen. This subject is dismissed with a few remarks on the repair of muscles and nerves, illustrated by familiar woodcuts from Billroth. Although as much has been said as could appropriately be in a short article on wounds, we cannot help thinking that so important a department of sur-

gical pathology might well have received more attention in a work of the dimensions of the Encyclopædia.

Approaching the question of treatment, we soon discover that the author is unwilling to concede that position to the doctrines of Lister which so many surgeons now accord to them. Although recognizing the value of various antiseptic lotions for purifying wound surfaces, he has little faith in the action of atmospheric germs as promotive of inflammation and suppuration. In speaking of the contrast between the action of open and subcutaneous wounds he says :—

“What there is in the air that makes this wide difference is now, as it ever has been, open to argument; and whether it is the stimulating or chemical influence of the oxygen, the irritating influence of atmospheric germs, the length of time the part is exposed, rather than the mere fact of exposure or some other cause, may be subject to dispute.”

Of the views of antiseptic surgeons and the results obtained by them, he boldly affirms, “that an enormous superstructure has been raised by the ingenuity of its builders upon a narrow foundation, and that good results have been too hastily attributed to causes which have been but semi-factors of a work to which others equally potent for good have, without doubt, contributed.” He, however, pays a tribute “to the name of Lister for having helped, more than any one else, to establish the value of antiseptic drugs and antiseptic precautions in the practice of surgery all over the world.” We shall see presently, in the following article, that this is a position which Mr. Lister’s pupil quite positively disclaims for his master. The particular kind of dressing on which Mr. Bryant pins his faith is that which he styles antiseptic irrigation of wounds, and consists in the washing out of all wounds, whether fresh or old, abscess or sinus, with a lotion of iodine, made by adding twenty drops of the tincture to the ounce of water. The subsequent dressing consists of either dry absorbent lint or lint soaked in a mixture of terebene and oil. Drainage tubes are an important feature of his method. In wounds of the face he very properly recommends no dressing whatever, and expresses strong disapproval of wet applications to wounds of any kind.

The special modes of treating wounds, such as by occlusion, the cotton dressing, the open treatment, the earth dressing, all receive the due share of the attention of the author; but the antiseptic method is reserved for Mr. Watson Cheyne in the following chapter. Here we find a summary of the work which has recently been published by this writer, and we strongly recommend it to the careful perusal of all surgeons who desire to learn the principles upon which Mr. Lister’s system is based, and wherein it differs from the antiseptic treatment of those surgeons who, like Mr. Bryant, maintain that they are applying the same principle as Mr. Lister, without his cumbersome methods. The studies of Pasteur and others having shown that putrefaction, like other forms of fermentation, was due to the growth of a micro-organism derived from the outer world, it occurred to Mr. Lister that fermentation might be prevented in the discharges from wounds by destroying through certain agencies the fermenting powers of these particles *before* they reach the wound. The most common way in which antiseptics are employed is by permitting the entrance of organisms into the wound, and neutralizing their power afterwards. The antiseptic is added to the discharge with the intention of neutralizing the growth of the organism; when this substance, like carbolic acid, irritates the wound, it in a measure defeats the object for which it

was intended by increasing the discharge. The drainage tube and the water bath are antiseptic, in that they conduct off the discharge; so also is the open-air treatment, for Pasteur has shown that the fermenting power of the organism is much diminished by a free supply of oxygen, and the discharge becomes concentrated by evaporation, and thus less suited for the development of bacteria. But these all differ from the great principle laid down by Lister, which aims at excluding the causes of fermentation altogether from the wound, and to which he gives the name of the *aseptic* method. The cry raised, when Mr. Lister changes any of the details of his dressing, that "Listerism is dead," rests on a misunderstanding of what Listerism is. The time may indeed come when the present dressing may be entirely changed, but the predominant principle of wound treatment "which is now a law of the first importance to the practical surgeon," will, it is claimed, and we think with justice, always remain.

The remaining portion of the article is devoted to a detailed description of the application of the aseptic method to operations and to the dressing of wounds. It is a point worthy of notice that Mr. Cheyne regards the spray as the least essential of all the details of the Listerian method; that he considers it as a convenience and not a necessity. The most essential part of the treatment is, he thinks, the thorough purification of everything which comes in contact with the wound. There are many details to be found in this article which are not easy to get hold of elsewhere, and make it exceedingly valuable to surgeons who practise this method. It is, moreover, the first official statement, if the term may be used, that has appeared in a general work on surgery.

A five years' experience with this system, although it has not carried us quite as far as some of the disciples of Lister go, has placed us among those who would return with great dissatisfaction to the methods prevailing in this country before the introduction of the aseptic method. While it does not seem possible in a hospital service to attain that high ideal which the great expounder of the system would exact, the method seems well adapted to ward off the particular class of dangers which such a service involves.

The chapter on poisoned wounds is contributed by Dr. John H. Packard, and includes dissecting wounds, insect-, and snake-bites; a number of cases, some of which have come under the writer's own observation, give special value and interest to the article.

An attractive feature of this part of the work is a short but exceedingly interesting article on sabre, bayonet, and arrow wounds, by Dr. T. H. Bill, surgeon and brevet lieutenant-colonel U. S. A. The greater portion of it is devoted to arrow-wounds, with which the writer appears to have had considerable experience. As surgeons rarely have an opportunity to see injuries of this kind, the facts reported are sure to be both novel and interesting to the writer. For instance, few are aware that the arrow is a most deadly weapon. "Its silence, its penetration, the difficulty with which it is recovered, the rapidity with which it is discharged, and its correctness of flight, confer upon it the highest deadliness." Moreover, the author states that "the arrow can be aimed at fifty yards as correctly as a revolver, and can be shot nearly as fast," and that an expert archer will deliver as many as six arrows in a minute. The abdomen is the most vulnerable portion of the body, it appears, and with the Indian this is the "point of election;" while the Mexican protects this part with special care by covering it with many folds of a blanket. In the removal of this



missile the greatest precautions are to be employed to prevent the separation of the head from the shaft, to which it is usually attached by a thong of hide. The lodgment of the head will almost inevitably produce fatal mischief. The author says:—

“If I should undertake such an operation, I would make up my mind to find the arrowhead, even if it became necessary to tear up every fasciculus of every muscle of the injured member.”

If possible, the head of the arrow may be pushed onward in its course until it reaches the integument, in which position it is easily removed, and the shaft subsequently withdrawn through the wound of entrance. If an attempt be made to extract the head through the wound of entrance no traction should be made on the shaft, but using the latter as a guide, and enlarging freely the wound, some form of instrument must be attached to the head in order to secure it successfully. The author gives a drawing of forceps with claw-like jaws so arranged as to encircle the head, the joint being made like that of dentists' forceps so as to allow of any amount of twisting without bending—a wire loop may be passed down over the shaft and twisted into the head. The latter is sometimes so firmly embedded in bone as to require nearly the amount of force exerted in the extraction of a tooth to loosen it. When once removed, healing of the wound by first intention may be encouraged by the surgeon.

Gunshot wounds are treated by Dr. F. S. Conover, who has taken advantage of the superb materials at his command to make this chapter a valuable feature of the volume. From a glance at these pages it is evident that the surgical history of our war still continues to afford the bulk of material which has advanced so considerably later writings upon this branch of surgery. Data from the Franco-German war are beginning to appear, but we presume that the present generation will not receive again so important a contribution to military surgery—always excepting the last volume of our national work, which has not yet appeared. There are, however, many additions to the surgery of the time of our war, and these our author, we are glad to see, has duly recorded. The value of the record of temperature in shock from gunshot injury, and particularly in wounds of the abdominal cavity, is properly estimated. On the other hand, we do not find that clearness of definition of the terms septicæmia and pyæmia which we could wish to find. Parotitis, we notice, is regarded as a septicæmic symptom in contradistinction to the views of some writers who place it among the pyæmic processes. In discussing the treatment of gunshot wounds of the abdomen those who read with interest the valuable article of Dr. Marion Sims will be glad to hear the writer express the opinion that:—

“The experience of the last twenty years has clearly demonstrated that the laying open of the peritoneum is not as dangerous as had previously been thought. . . . Whenever the symptoms clearly indicate that extensive bleeding has recently occurred, or is still taking place; or that there has been an intra-peritoneal extravasation of urine or of bile—it certainly seems to be proper, and the surgeon's duty to perform laparotomy, turn out all clots, tie such undivided vessels as can be found, sew up the opening or openings in the intestinal tube, thoroughly cleanse the cavity, and provide for the ready outflow of any fluid that may afterwards be poured out.”

In this direction lies the most obvious road to improvement in this department of surgery: it remains for time and experience to decide whether

we shall here find a permanent and important addition to our surgical knowledge.

To those who have felt that the injury to our late President was more completely under the control of modern science than the result proved, it may be a consolation to learn that had he lived, the injury to the vertebræ might have been accompanied by "more or less serious disturbance (pain, weakness, or positive paralysis), usually remaining during the after life of the individual, with perhaps caries and abscess, or fistulæ, communicating with dead bone." Recovery may, however, take place with very little after disturbance, but this is generally in youngish subjects. These statements are interesting in connection with the assertion of Esmarch, that wounds of this order are frequently recovered from. The criticisms of this distinguished surgeon on the antiseptic character of the treatment adopted in the case of President Garfield, although emphasized by many statements which will not bear a cross-examination, will, we hope, help to draw attention to what may eventually become a radical change in the treatment of gunshot injuries. It must be acknowledged even by those who have not adopted the principles of Lister, that the traditional method of dealing with shot injuries; the search for the ball with probe and finger as ordinarily performed, cannot be reconciled with antiseptic treatment, however liberally interpreted. The complicated preparations of spray and other accompaniments cannot of course be obtained on the battle-field, but surely the demand for "the thorough purification of everything (hands, instruments, etc.) which comes in contact with the wound" (see page 75) is not an unreasonable one. The recognition of views now freely advanced, that the presence of the bullet in a wound is not necessarily an element of danger, and that it is of the greatest importance to avoid an examination until it is possible to leave the wound in a condition the most favourable for healing, will, if they are confirmed by experience, have distinctly advanced our knowledge of the treatment of gunshot wounds.

The Effects of Heat, is the title of a chapter on burns by Dr. Thomas George Morton. The article very appropriately opens with some account of the varieties of accidents which give rise to this form of injury. When we learn from the daily press that, during the eleven months of 1882, among the buildings destroyed by fire, there were 362 hotels, 99 churches, 62 school-houses, 20 court-houses, 14 asylums, 13 college buildings, 7 hospitals, 6 almshouses, 2 custom-houses: total, 585—a property valued at ninety millions of dollars—we may gain some idea of the importance of which injuries from these causes are bound to assume in the surgery of to-day. An essay which dealt with the prevention rather than the cure of this class of surgical affections, would doubtless prove far more interesting reading, as our knowledge of the treatment of burns has made no essential progress of late years. Dr. Morton has, however, succeeded in giving a flavour of originality to his work, and has, indeed, under the head of "prophylaxis," called attention to some of our national weaknesses, for which we pay so severe penalties. The association of albuminuria with febrile disturbance, after burning, is made the subject of special study, which is illustrated by a number of interesting charts and cases, and forms the most striking feature of this article. A section on sunburns finds a most appropriate place here, and the cases reported should serve as a warning to young men who are ambitious to "pose" as boating "swells" of the period. We could add to the cases quoted one which occurred in the person of an old sailor, who was making his first trip of

the season in a summer yacht. The œdematous swelling of the backs of both hands was intensely painful, but was promptly relieved by irrigation applied at the hospital to which he was transferred.

The various applications for the treatment are mentioned with due discretion, and careful directions are given in case of burns from acids or alkalies.

The Effects of Cold, is the title of an article by Dr. J. A. Grant, of Ottawa.

It is customary, in most English surgical works, to give a special chapter to "abscess," but it has always seemed to us a very unscientific and somewhat misleading plan. Abscess is but a sequel of pre-existing disease, and would more appropriately be dealt with incidentally to inflammations of the cellular tissue, bone, or other structures, where it is liable to occur. There are, however, certain features common to abscesses which can be considered separately to advantage, but the subject should be placed in close proximity at least to some cognate subject. To Mr. Howard Marsh, of St. Bartholomew's Hospital, this chapter has been entrusted. The relation of germs to abscesses; their presence or absence under varying circumstances is a question which has excited considerable attention, but which we fail to find mentioned. Some of the peculiarities of abscess alluded to in the text, may possibly be explained by a study of this relation, such as residual abscesses, or those formed in or about the residues of former inflammation, when the presence of permanent germs or spores might, after long quiescence, suddenly under favourable conditions awaken the inflammatory process. The diagnosis of abscess is, perhaps, one of the best features of the article. Another valuable feature is the citation of cases in condensed form, illustrative of the text. The late Dr. John T. Hodgken had fortunately completed his article on ulcers, which will prove a source of melancholy interest to his many friends. The most notable feature is the high praise awarded to Dr. Martin's method of treating ulcers with the elastic bandage.

Dr. E. M. Moore, of the University of Buffalo, follows with an article on gangrene and gangrenous diseases, which include also furuncle and carbuncle. The space allowed for these subjects is but a meagre one, and the author has apparently been forced to confine himself to the more practical features of his task. The pathological part has suffered in consequence. This is, indeed, a criticism which might hold of most that has been written for the first two volumes of this work. The demand "for practical treatises" may still continue, but we have no fear ourselves that a little more science would hurt the American medical reader. The different varieties of gangrene are carefully noted. One which we do not remember before to have seen in an English text-book is symmetrical gangrene. Some account of Dr. Maurice Reynaud's article on that subject, to be found in the *Nouveau Dictionnaire*, would have been a very valuable addition to this section. The rules for treatment are almost without exception excellent, and the plates which illustrate the article are beautiful specimens of the chromo-lithograph.

Veneral diseases are at the present time so completely separated from general surgery, and have become so exclusively the property of a specialty, that they rarely figure as a feature of a course of lectures on surgery. They are still retained in works on surgery for the same reasons, probably, that chapters on the eye and ear continue to appear. The general reader is not supposed to be satisfied, unless all the ground is covered that does not come strictly under the head of medicine or midwifery. It has been

said that, leave out the specialties, and there is little left of surgery but fractures and amputations, but he who has to write the book will find that, with our increase of knowledge, the field will still be as large as ever. It would hardly be judicious to omit this subject entirely from a great treatise like the present one, but we are not prepared to acquiesce in so large an appropriation of space, over one-third of the volume, to this department. Our sense of proportion is somewhat jarred in comparing the length of the article on so important a feature of pure surgery as gangrene with that on gonorrhœa; the former containing thirty pages, the latter eighty pages. The author of this article is Dr. J. William White, of Philadelphia, who combines a considerable experience with a very complete knowledge of the literature of this subject. We may say the same of the chapter on the chancreoid, by Dr. F. R. Sturgis, of New York, and that on syphilis by Dr. Van Harlingen, of Philadelphia. They are important contributions to the literature of this specialty, and deserve a separate and extended review.

It might be supposed that similar criticisms could be applied to the article on Diseases of the Skin, by Dr. James C. White; but the writer has seen fit to limit himself exclusively to those diseases in which treatment by some form of operative procedure is sometimes called for, and in this respect alone it seems to us to possess a great advantage over similar chapters in other works. It contains precisely the kind of information which the surgeon wishes to obtain, and thus establishes its right to a place in a work on surgery. The strength of the chapter lies, however, as one might expect, in those portions chiefly which belong in the domain of the dermatologist rather than the surgeon. It opens with an account of the affections of the sebaceous glands, which is followed by inflammations of the skin produced by poisonous substances, and a table of such medicinal substances as are followed by eruptions. A valuable note is added on the erythematous eruptions which follow surgical operations. Eczema, of course, finds a place here, and has a somewhat more extended notice. Under the hypertrophies we find a section on the epidermic crusts familiar in the faces of old people, and known to those learned in dermatological lore as keratosis senilis. Although strictly belonging under this head, their frequent association with cancerous affections of the face might suggest a closer proximity in the text. Under diseases of nail the surgeon will recognize an old friend in ingrowing toe-nail, which is of course necessarily introduced here, although it seems a little startling to find him in the camp of the specialist. Under diseases of the hair, it is pleasant to record a distinct advance in the treatment of hirsuties, namely, the method of electrolysis introduced by Dr. Michel, which, although illustrating painfully the old French adage, "*Il faut souffrir pour être belle*," will nevertheless be hailed by the female sex as an unquestionable boon. The section on leprosy, elephantiasis, and lupus are among the best of this chapter, and with the concluding remarks on parasitic affections show the ability of the writer to the greatest advantage. One regrets only that the exigencies of the occasion have confined him to so limited a space. We venture, however, one word of criticism. The writer, a disciple of Hebra, has seen fit to quote chiefly from the writings of the present exponent of the Vienna school, and in so doing has hardly done full justice to the work of his own countrymen.

We come now to diseases of tissues, and first of all the cellular tissue, a subject which is briefly, but well handled by Dr. Joseph W. Howe, of

New York. Although we are not prepared to accept his classification, yet the more important forms of inflammation of this tissue are clearly described. This is a department which needs careful handling, for although an exceedingly common disease, its pathology is not usually clearly laid down in the books, and much confusion of ideas and nomenclature exists in consequence among surgeons. This is particularly true of the diffuse forms of cellulitis which are often confounded with phlegmonous erysipelas. For this reason we should prefer the French division into diffuse and circumscribed cellulitis. The article on abscess could, as we have said, be more appropriately placed after this chapter than where it is, earlier in the volume, for abscess is but a sequel of inflammation of the connective tissue, and not, as many of us have been taught, an entity by itself to be regarded in the light of an independent disease.

Dr. Nanerède's article on Injuries and Diseases of the Bursæ, which closes this volume, is a particularly satisfactory one to the critic's eye. He is not slovenly about his pathology, nor is he to be caught napping on his literature—as for his anatomy—well, the less we acknowledge our previous ignorance the better! The reader need not fear that this is not a “practical” article for his views on treatment, as, for instance, the management of deformities of the toes and their sequels are thoroughly sound. The concluding pages are devoted to perforating ulcer, which, by the way, is also mentioned by Dr. J. C. White. Dr. Nanerède recognizes several varieties, specimens of which we remember to have seen several examples, but the pure *mal perforant* we have never seen in this country, *i. e.*, the typical forms described by French writers, and seen so frequently in French hospitals.

In giving a general estimate of this volume, we must say that, although the standard of the first volume is well sustained, the individual articles appear to have been curtailed for want of space. As a companion to Ziemssen's *Cyclopædia*, it will suffer in this respect by comparison; as it will also with the great German *Surgeries* or the *Nouveau Dictionnaire*, but as a book of reference for the practitioner, it will, of course, be better adapted than any of these. The great preponderance of American authors is an indication of the capacity of the profession in this country to produce a work on this scale, quite independently of foreign aid. The publishers' work is done in a style equalled in few American medical books. J. C. W.

- ART. XXII.—*The Physiology and Pathology of the Blood: comprising the Origin, Mode of Development, Pathological and Post-mortem Changes of its Morphological Elements in Mammals and Oviparous Vertebrates.* By RICHARD NORRIS, M.D., F.R.S.E., Professor of Physiology, Queen's College, Birmingham; Vice-President of the Birmingham Philosophical Society. With Microphotographic Illustrations. 8vo., pp. xiv. 274. London: Smith, Elder & Co., 1882.
- Dr. Norris's Third Corpuscle of the Blood. A Criticism and Refutation.* By MRS. ERNEST HART. Pamphlet, 12mo., pp. 12. Reprinted from the London Medical Record, of Oct. 15, 1882.

FAMILIAR as is the chemical and structural composition of the blood to most of us, the question of the origin and formation of its red corpuscular

clements cannot be considered as demonstrated to the satisfaction of more than a very few, if to any. Any publication, therefore, be it volume or pamphlet, which promises to give us the light we seek, will be eagerly read by all inquiring physicians. Dr. Norris's book should, therefore, have many readers. As to whether these will be convinced by the facts and reasoning adduced, we will not anticipate opinion.

First. Dr. Norris claims to have discovered, as early as 1877, in the blood of mammals a large number of corpuscles of the same colour and same refractive index as the liquor sanguinis, and which are, therefore, invisible in that menstruum. This new corpuscle, which he calls the third corpuscle, he succeeded in photographing with high powers, and its existence may, therefore, be considered undoubted. His researches were first published Nov. 14, 1878, and he claims, therefore, to have anticipated the discovery of the same element by Bizzozero, who first published his paper "On a New Element of Mammalian Blood and the part it plays in the Production of Thrombi and Coagulation Generally," Jan. 14, 1882. From a careful comparison of the text of both observers, conveniently arranged by Dr. N. for such comparison, it appears to us that this point is well sustained—that Dr. Norris did anticipate the Italian investigator in the discovery of the invisible corpuscle, although there is nothing to show that the latter was at all aware of Dr. Norris's discovery.

Unquestionably, also, Dr. Norris has succeeded in photographing certain corpuscles of the blood, which, under the same circumstances, are invisible to the eye aided by the microscope. Now there can be only three views taken as to the nature of these corpuscles. Either they are the ordinary red disks of the blood which have become decolorized, or they are red disks which have lost their colour as a preliminary towards dissolution, or they represent a stage of the existence of these disks in which they have not attained a degree of colour sufficient to make them visible. The latter view is the one taken by Dr. Norris, to the proof of which a large part of his book is devoted; the first is the view of Mrs. Ernest Hart, the object of whose pamphlet is to refute the position of Dr. Norris. Dr. Norris, assuming that these represent an earlier uncoloured stage in the life of the red disk, proceeds to account for them, and to lay down a theory of evolution for the red blood disks which seems quite consistent with his premises. He also suggests a theory of leucæmia and another of anæmia. We will, however, chiefly confine ourselves to a study of the evidence he offers in favour of his principal proposition, that there is a third invisible corpuscle in the blood; and as Mrs. Hart's object is to refute such evidence, we will, at the same time, consider the weight of her objections.

Against the view that they are red corpuscles which have lost their hæmoglobin in the brief interval (a few seconds) between the shedding of the blood and its examination, Dr. Norris says it may be urged—

- "1st. That they are obtained in greatest perfection when those measures are adopted which tend to preserve the blood from change, *i. e.*, cold or osmic acid.
- 2d. They may be seen immediately the preparation is made (packing method), and before the liquor sanguinis has become stained, and they do not increase in number as time elapses.
- 3d. Assuming the red corpuscles to lose hæmoglobin, the loss must occur in such a manner as to furnish corpuscles exhibiting all gradations between a *colourless* and a *full red* biconcave disk. If, therefore, we start with the idea that the corpuscles originally are all coloured, their decolorization in this *graduated manner* would of itself indicate a difference in nature.
- 4th. If a three-quarter per cent. solution of salt be saturated with hæmoglobin, and a drop of this be placed upon the end of the finger, and the latter be pricked

through the drop so that the blood may come at once into contact with fluid saturated with hæmoglobin, the colourless disks are still present as usual. It is obvious that these are not conditions favourable to the yielding up of the colouring matter. 5th. When first brought into view by the method of altering the refractive index of the liquor sanguinis, many of these corpuscles are of a pure white colour, but they gradually become stained by the hæmoglobin discharged by the red corpuscles. It is impossible to suppose that they first yield up the whole of their colouring matter, and then subsequently take it up again. 6th, finally. The general behaviour of these corpuscles after the blood is shed, their tendency to break up into granules, to lay themselves down as delicate films, to form networks; in a word, their fibrin-forming property is totally opposed to the conception that they were once red disks.

"The second conjecture that they are red disks which have lost their colour as a preliminary step towards dissolution, has no facts to lend it support, while it is easy to show the existence in the blood of dark red granules, to which it is difficult to attach a meaning, unless we regard them as red corpuscles undergoing disintegration. These often occur in masses, but the same disintegrating actions may be traced in single corpuscles."

The "packing" method alluded to, consists in selecting a thin glass cover, which is slightly convex, placing it with its more convex surface upon a glass slide, and strapping it there so firmly as to produce a series of Newton's rings of an elongated form. A drop of blood is placed at the edge of the cover, and the corpuscles are drawn in by capillary attraction until they reach a spot they cannot pass in consequence of the proximity of the two surfaces, whilst the liquor sanguinis has free passage. Dr. Norris claims that the corpuscles are not compressed by this treatment, while Mrs. Hart insists that they are, as it seems to us is evident upon a little consideration. The blood disk is very soft and pliant, as is well known to any one who has seen the bending which a red disk undergoes in its contact with resistance in its own current, and doubtless this same property permits it to become thinner and thinner, as it is drawn in between the two glasses. This compression favours the extrusion of its hæmoglobin, as is admitted by Dr. Norris on page 52, although he denies it on page 47. He admits, pages 49 and 51, that the corpuscles in this way may become barely visible, and even invisible, not because they are actually colourless, but because the liquor sanguinis has become coloured to a like intensity with themselves. This inconsistency Mrs. Hart points out. Such extrusion being admitted, it is impossible to deny that the colourless disks are really the ordinary red blood disks discoloured, although it may be almost as difficult to prove that they are. Still it would seem that the burden of proof rests with Dr. Norris.

That they are obtained in the greatest perfection when treated with osmic acid, Mrs. Hart also denies. It is true that a two per cent. solution of osmic acid fixes albuminoid bodies like the red blood disks, but in order that it may do this, the solution must remain of the same strength, and be brought into immediate contact with the corpuscles. Mrs. Hart contends that in Dr. Norris's method of treatment the solution of osmic acid is diluted by the serum of the blood, and, therefore, does not fix the corpuscles. She describes a method of her own, in which the treatment by osmic acid failed to develop the invisible corpuscles. Dr. Norris claims to have repeated this process with the opposite result, finding the colourless disks present in abundance. Here, of course, is a question of accuracy of observation, which must be determined by a third party. But in a more recent experiment Mrs. Hart placed two large drops of the two per cent. solution of osmic acid in a watch-glass, and into this

squeezed a small drop of blood and stirred rapidly with a glass rod; from this mixture were taken, at intervals of one, ten, and twenty minutes, small drops which were run under mica covers for examination. In all except the first specimen, the liquor sanguinis remained perfectly clear and colourless, and the corpuscles packed beautifully. *Not a trace, however, of the invisible corpuscles could be found*, though she sought for them most diligently. At the end of twenty minutes the mixture was diluted with a fluidrachm of water, with the object of changing the refractive index of the serum, after the corpuscles had been fully fixed. Careful examination of this solution *failed to discover a single invisible corpuscle*, even though the staining reagents, which bring into view the disks rendered quite invisible by the action of water, were added to the solution. If this observation is correct, it effectually destroys the force of Dr. Norris's second reason, and proves the correctness of Mrs. Hart's proposition.

So, also, Mrs. Hart criticizes Dr. N.'s treatment of the corpuscles with absolute alcohol, showing that he does not secure the action of absolute alcohol, but of dilute alcohol, which causes the corpuscles to discharge their hæmoglobin and to become transparent.

Again, she shows that the effect of a three-fourths of one per cent. solution of common salt—used by Dr. Norris to develop his invisible corpuscles—is to cause a certain number of the ordinary red disks to become invisible, about three per cent., although “this figure would doubtless vary with the health and age of the subject of the experiment.” Dr. Norris puts down the invisible corpuscles as one in sixty, which is much less than he obtained by treating the blood with a saturated solution of salt used in his earlier experiments, and published in his first paper. The substitution of the more dilute solution Mrs. Hart claims to be the result of an earlier criticism of hers, although Dr. N. makes no allusion in his recent work to such change.

Finally, Mrs. Hart repeats Dr. Norris's experiment of mixing the blood with a soluble colloid, such as albumen or gum (by means of which he considers that the hæmoglobin is prevented from escaping from the corpuscle), and then allowing this mixture to run under thin mica covers. Dr. Norris says that the invisible corpuscle will then be found to be present. But again she fails to find the invisible corpuscle so long as the liquor sanguinis remains untinted, but it appears as usual when the hæmoglobin begins to be effused from the corpuscles. She calls attention to a photograph (No. 52) in Dr. Norris's book, taken from blood thus treated, in which he says “the invisible corpuscle is present as usual.” We quite agree with her that “it would be difficult for an unbiased person to detect in it the presence of a single colourless corpuscle,” meaning, of course, the “invisible” or “colourless disk” so often referred to.

Now, if it is shown that by a single method of treatment which admittedly fixes the blood-corpuscles in the condition in which they are at the moment they leave the bloodvessels, these invisible disks are not present; and that, on the other hand, their appearance is brought about by a treatment which favours a change in the physical condition of the blood-corpuscles, the whole theory of their existence falls. And this seems to us the inevitable conclusion to which the experiments of Mrs. Hart lead us. The researches of Dr. Norris are very painstaking and laborious, but they seem to us to fail in their object.

It remains only to mention briefly Dr. Norris's views on the remaining



matters connected with blood formation, on leucæmia and anæmia. He holds that there are in the lymph two kinds of lymph corpuscles, which are really *disks*, smaller, but somewhat thicker than the blood disks. These he indicates as *primary* and *advanced* lymph disks. The latter are the free nuclei of the former, and, in the main, enter the blood in such a forward state of development, as to become at once the smooth *invisible* colourless disks; but a few less perfectly elaborated present themselves in the blood as very delicate, translucent, *visible* disks, free from hæmoglobin, which, however, gradually pass into the invisible state. The shedding of the protoplasm which converts the primary into the advanced lymph disks takes place on the lymphatic gland, or the thoracic duct, whence they are poured into the blood in large numbers. They gradually become coloured by the endogenous secretion of hæmoglobin, and thus become the ordinary visible red blood disks. A few of the primary disks escape this decapsulation in the blood glands and pass over into the blood more visible than the advanced lymph disks and slightly larger in size. They do not pass into the invisible state, but undergo development into the *mininuclear white corpuscle*. These develop, by divisions of the nuclei, into the *multinuclear white corpuscle*. The nuclei of this corpuscle again may become free, become invisible disks, and subsequently red disks. The accidentally visible element of the "fugitive group" of invisible disks, is the corpuscle seen in the circulating blood by Bizzozero. "Its existence is but the indication of the presence of a far more numerous series of corpuscles which are wholly invisible to the naked eye, but some of which are, nevertheless, capable of being photographed."

So, too, he considers that the "hæmatoblasts" of Hayem are nothing but granular fragments of broken-down, invisible disks. In the invisible disks also exist the elements which are essential to the formation of fibrin and the coagulation of the blood, fibrinogen, fibrinoplastin, and fibrin ferment. The fibrin, which forms in the *lymph*, is a product of the *advanced lymph disks*, while the ordinary clot, which forms in *blood* in a state of desquescence, is formed entirely of these and the invisible corpuscles.

With regard to the office of the bone-marrow, as a blood-making organ, Dr. Norris says:—

"As a lymphoid organ, the bone-marrow possesses special characteristics, which distinguish it from the spleen, lymphatics, thymus, etc., in the fact that, at an early period of embryo life, its colourless nucleated elements develop, *in situ*, into red nucleated cells, and that, at a more advanced period, these undergo conversion into, or give rise to red disks; but even in the embryo, side by side with this mode, a new method for the formation of red disks is set up, which consists in the *colouration of naked nuclei*, which have been set free from the colourless cells of the marrow. This differs only from the general mode of blood formation I have described, in the fact that colour is obtained in some instances before the nuclei leaves the marrow, instead of after they have entered the blood. These embryonic modes of blood formation persist in some of the lower mammals throughout life, alongside the numerically far more important modes, in which free nuclear disks leave the marrow and enter the blood in a colourless state. In the higher mammals the bone-marrow at birth ceases almost entirely to produce disks by means of red nucleated cells, and, in common with the other lymphoid organs, transmits to the blood naked nuclei, or advanced lymph disks, which, passing through the invisible stage, reappears as pale, red disks, and ultimately becomes fully coloured. It is, of course, possible that, under some conditions, embryonic modes may be reverted to, and in such cases even the bone-marrow of higher mammals might be found to again produce red disks from red nucleated cells. These are not, however, its normal condition." (Pages 195, 196.)

According to Dr. Norris it is the nucleolus of the nucleated red cell of the bone-marrow which becomes the red disk, being freed by the consecutive disintegration of the cell-wall, the nucleus, and the envelope of the nucleolus.

Dr. Norris considers the colourless ellipsoids of the ovipara to be the analogues of the advanced lymph disks of the mammal, being transmitted to the blood like the latter in a colourless state to obtain their hæmoglobin in the circulation.

Leukæmia, according to Dr. Norris, is due to a hyperæmia and hyperplasia of lymphoid organs, as the result of which the lymph corpuscles are not retained long enough to permit the decapsulation of the primary lymph disk, and the setting free of its nucleus as the advanced or invisible disk. Hence, nucleated white corpuscles pass over into the blood in large numbers.

Anæmia, according to Dr. Norris, is the result of a diminished vitality of the lymph disks, which leads to a reduction of their life period, and consequent decrease in their numbers. As the hæmoglobin is gained gradually in the blood, equal increments in equal times, there must be a decrease of hæmoglobin disproportionate to that of the number of corpuscles shown by experiment to be as three to two. This explains the typical variety of anæmia. But the vitality of the corpuscle may be differently affected, impairing the normal rate of the hæmoglobin-producing function, so that the proportion of this coloring matter is reduced below that proper to the number of corpuscles present in the typical form of anæmia; or the vitality may be still differently influenced, as the result of which the disk-producing power of the lymphoid organs is diminished, still further reducing the number of corpuscles, and resulting in the conditions known as pernicious or essential anæmia. These are, of course, theories which are not demonstrated, but they are at least as plausible as any others which have been suggested in connection with these subjects. Mrs. Hart suggests that the theory of anæmia does not explain those cases of pernicious anæmia in which the number of corpuscles is enormously diminished, but the proportion of hæmoglobin per corpuscle is above the average.

J. T.

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ART. XXIII.—*A Dictionary of Medicine, including General Pathology, General Therapeutics, Hygiene, and the Diseases peculiar to Women and Children.* By various writers. Edited by RICHARD QUAIN, M.D., F.R.S. 8vo. pp. 1816. New York: D. Appleton & Co., 1883.

IN a work of such proportions as this volume of 1816 pages of fine type, it is impossible for a reviewer to attempt thorough criticism in a limited space. Any selection of articles must seem invidious, because the reader cannot fail to acknowledge such a general excellence as will leave little room for adverse criticism. All the articles are concise and yet are comprehensive enough to be satisfactory. These characteristics are best shown by the care bestowed upon subjects which have received but cursory notice in some of the encyclopædias which comprise many volumes. For instance, Enlargement of the Bronchial Glands, is treated by Dr. Quain. He comments upon the symptomatology under eleven heads. 1. Cough;

2. Pain; 3. Difficulty of Breathing; 4. Difficulty of Swallowing; 5. Congestion of Face; 6. Hæmoptysis; 7. Expectoration of Mucus; 8. Loss of Voice; 9. Vomiting; 10. Relief afforded by Change of Posture; 11. Physical Signs. Enlargement of the Bronchial Glands as a cause of reflex excitement of the Vagus, is considered in the same article, and also in that on Pertussis, by W. Squire. Besides, there is a very interesting article entitled Diseases of the Pneumogastric Nerve, by W. R. Gowers. The same detail is observed by J. Risdon Bennett, in his paper on Mediastinal Growths and Malignant Disease of the Lungs. But this attention to detail is perhaps carried to an extreme in the consideration of Diseases of the Heart. For instance, Dr. Bruce describes Fibroid Disease of the Heart, also Congestion of the Heart with increase of Connective Tissue, while Dr. Quain considers the subject of Connective Tissue, Hypertrophy of the Heart. Balthazar Foster supplies an excellent article on Valvular Heart Disease, and Bristowe considers Cardiac Dilatation and Cardiac Hypertrophy. In addition we find an interesting sketch of Malformations of the Heart, by T. B. Peacock. The perspicuity of the subject would have been increased if the fifty pages devoted to it could have been penned by fewer hands. Thomas Hayden and T. Holmes consider the subject of Aneurism. The articles on Contagion, by John Simon; Germs of Disease, by H. C. Bastian; Zyme and Bacilli, by Victor Horsley; Micrococci and Malignant Pustule, by Greenfield, are all very comprehensive and thoroughly abreast with modern views. Even the Bacilli of Koch receive due attention. But after reading all of them one is tempted to feel that ultimate truth on this subject has not yet been reached, perhaps not beyond the—

“little pitted speck in garnered fruit,  
Which, rotting inward, slowly moulders all.”

A valuable contribution is made by Chas. S. Roy on the Nucleus of Cells, especially in relation to cell proliferation. Eighteen pages are reserved for Renal Disease, the subject having been given to T. Grainger Stewart. He has classified Bright's Diseases as Inflammatory, Acute, and Chronic; Waxy and Cirrhotic. The commonest cause of the latter form being abuse of alcohol, particularly in the form of ardent spirits. Surgical Kidney is elaborately described under the following heads: 1. Chronic inflammation followed by absorption of the medullary portion and later on by stretching and thinning of the cortex without pyelitis. 2. Acute diffuse interstitial nephritis without suppuration. 3. Acute interstitial nephritis with scattered points of suppuration. 4. The cicatricial kidney.

The sections upon Diseases of the Liver are probably the least satisfactory in the book. There is, however, a masterly summary of the subject of Jaundice by Murchison. “Rheumatoid Arthritis immediately follows ordinary acute rheumatism in a considerable proportion of cases.” In this view many will differ with Dr. Bruce.

Tubercle is perspicuously considered by S. J. Gee, and the same clear conciseness characterizes the articles upon Phthisis and Diseases of the Pleura. A contemporary reviewer has called attention to a typographical error of some importance, viz., the statement of the dose of picROTOXINE as  $\frac{1}{6}$  of a grain instead of  $\frac{1}{10}$  for the night sweats of phthisis. The Diseases of the Brain and Spinal Cord are entrusted to the able hands of Hutchinson, Gowers, and Bastian. The account of the Diseases of the Spinal Cord is especially satisfactory. But enough has been said to indicate the scope of the book. The authors include many of the most noted

names in the British Islands, and the book is of value on this account as a reliable work of reference. Such general subjects as Hospitals, their construction and hygiene; Nursing, and the training of nurses; Disease and its treatment by rational methods based on the advance of the knowledge of the nature of disease and the scientific study of the action of medicines, are all discussed at length. Homœopathic treatment is described in the words of Molière, who wrote long before Hahnemann, as “l'art d'amuser le malade pendant que la nature guérit.” But the antithesis is not stated, viz., that scientific therapeutics is but too often a meditation upon the causes of death.

E. T. B.

ART. XXIV.—*Manual of Gynecology*. By D. BERRY HART, M.D., F.R.C.P.E., Lecturer on Midwifery and Diseases of Women, School of Medicine, Edinburgh, etc., and A. H. BARBOUR, M.A., B.Sc., M.B., Assistant to the Professor of Midwifery, University of Edinburgh, etc., with 9 lithographs and 400 wood-cuts. 8vo. pp. 644. Maelachlan & Stewart, Edinburgh, 1882.

THE term “manual,” will convey to one who has not seen the volume under notice, a very imperfect idea of its character and value. We are obliged in general, to put a low estimate upon the class of books issued as manuals, which are usually very poor substitutes for standard works upon corresponding subjects. But in this instance we are happy to make an exception. What a digest of laws is to the legal investigator, this condensation of knowledge is to the gynecologist. We have here presented to us, in as few words as possible, a body of science, sufficient if extended to fill several volumes. The authors have collected from the best treatises and monographs, the latter chiefly from journals, in English, French, and German, the latest opinions and directions upon the diseases of women, their treatment and surgical management, and have presented in illustration, not only the diseased conditions to be treated, but an extensive armamentarium of instruments and appliances, to be employed in effecting a cure. Some idea of the research of the authors may be formed from the fact that the index contains the names of 286 writers, whose books and articles have been consulted and quoted. Among these we notice as frequently referred to, the names of Barnes, Bandl, Breisky, Matthews Duncan, Emmet, Foulis, Fritch, Gusserow, Hegar, Mundé, Næggerath, Olshausen, Ruge, Schröder, A. R., and Sir J. Y. Simpson, J. Marion Sims, Spiegelberg, Tait, T. G. Thomas, Virchow, Spenceer Wells, and F. Winekel, which are very familiar to all gynecological students. Instead of the usual plan of giving the bibliography at the beginning or end of the volume, each chapter and special article commences with a list of the papers consulted in its preparation. This gives to the reader a very valuable index mediens, and adds very largely to the value of the work, by directing the student of any one portion, to elaborate treatises in which he may find the subject in question more fully presented.

We take great pleasure in recommending this work to the medical profession of our country, as fully up to the times, and one of great value for ready reference. The volume does credit to its publishers, its type being clear, and its wood-cuts well executed and effective. It will make quite an important addition to gynecological treatises.

R. P. H.

ART. XXV.—*Minute Anatomy of the Central Nervous System of certain Reptiles and Batrachians of America. Illustrated by Permanent Photo-micrographs.* By JOHN J. MASON, M.D. Series A. Newport, 1882. Large 4to. pp. 24, pl. cxiii. Author's edition.

THIS handsome volume is in great part made up of a number of photographs adapted for surface printing, and illustrating the structure of the brain and spinal cord of the more common types of reptilian and batrachian life as they are met with in this country. A work so original in scope, so beautiful in execution, so gratifying to the feelings of national pride, is deserving of the warmest commendation. No similar work, so far as we know, has ever been undertaken for any fauna. The results are of great value, not only to the histologist but to the naturalist; for the structural features of the spinal cords of the animals taken for study are so pronounced that systematists cannot fail to make use of them, as they have already made use of characteristics of the brain. In glancing over the plates the observer can detect with ease the spinal cords of the chelonians by the relatively small amount of gray matter in the dorsal region, by the paucity or absence of cells in the anterior horns, by the great width of the anterior median fissure, and by the large amount of reticular fibres developed upon the lateral aspect of the gray columns. In the ophidians he finds that the posterior horns are almost united, the commissure is of enormous size, the sides of the cord possess two remarkable fibrous structures known as the lateral ligaments, the fissures are inconspicuous, and the posterior nerve-roots arise from the *cervix cornu* instead of the *caput cornu*. In the saurians he finds the commissure to be perforated longitudinally by a pair of columns of nerve-fibres. In the batrachians, the connective tissue is seen about the central canal to be of unusual development, while in the genus *Siren* it even embraces the cord as a cortical layer; connective tissue corpuscles are abundantly distributed throughout the cord, being better developed in the gray columns than in other groups; the posterior columns of the cervical portion are projected above the plane of the lateral columns, and exhibit distinct differences in the arrangement of nerve-fibres as compared with the remaining portion of the cord.

The author has not studied the spinal cord of the bird-type in connection with that of the reptilian. Many questions of relationship suggested by the plates must remain unanswered until examinations by methods similar to those here employed are made of forms that are already known to closely resemble the reptilian. It may be that series B of the work will contain the desired material.

It is well understood that the amount of gray matter in the spinal cord of the human subject bears an exact relation to the number and size of the nerves which arise from the cord, and that the cervical and the lumbar enlargements are correlative with the nerves supplying the limbs. Yet the author believes that no explanation has yet been given which accounts for all the variations as they exist in the cords of the lower animals.

In all the forms the posterior median fissure is less conspicuous than in man, while, as a rule, the commissural connections between the halves of the cord are more conspicuous. In describing these conditions the author speaks of the gray column becoming fused. Would it not be a more appropriate use of terms to say that the division of the primal gray

column into a right and left part had in such examples been imperfectly accomplished?

The most important announcement in histology relates to the connections existing between the size of the nuclei of the so-called motor-cells and the power developed in the muscles. These cells are found to have average diameters, which are proportionate to the power of the muscles. If subsequent research should confirm the accuracy of this statement, it will go far in removing from histology the opprobrium, so often urged by its detractors, that it has failed to contribute a single generalization or important truth to biology.

We have confined our remarks in this notice to the spinal cord, but the medulla oblongata, together with the cerebellum, the optic lobes, and the cerebral and olfactory lobes, have also been figured. We have no inclination to follow the author in this difficult field, since it is one that will not permit of brief survey. When the author shall have completed his entire series of publications, as we trust he will, we will have a mass of facts of immense value, not only to the histologist and the physiologist, but to the systematist as well.

H. A.

ART. XXVI.—*Transactions of the American Otological Society. Fifteenth Annual Meeting.* 8vo. pp. 73. Boston: A. Williams & Co., 1882.

THE first paper is a report on *The Use of Soft Rubber Drainage Tubes in Chronic Suppurative Inflammation of the Tympanum, with narrowing or closure of the Meatus Externus*, by Dr. O. D. POMEROY, of New York.

The cases, which occurred among the children of a foundling asylum, were very obstinate, and could not be managed by any of the usual forms of treatment. Incision of the walls of the canal or an opening made into its deeper portion by an incision behind the auricle failed to be of use. At the suggestion of Dr. Chadbourne, physician of the asylum, rubber tubing was introduced into the meatus in these cases, and was found to answer admirably. A soft variety of tubing should be used, the black or red rather than the ordinary white, as the latter is too hard and stiff. It is sometimes necessary to commence with a very small tube, two or three lines in diameter, which is introduced by means of a stilet. Larger tubes are used as the meatus dilates. They are not perforated like the ordinary drainage tubes, as they are intended to protect the meatus from the ichorous discharge. Dr. P. claims that polypi of the canal are absorbed by the pressure of the tube, and that the canal is restored to its normal calibre by mechanical dilatation and relief from inflammation.

The tympanum is cleansed by syringing through the tube.

*A Case of Abscess of Cerebellum following Otitis Media months after apparent cure*, is reported by Dr. A. MATHEWSON, of Brooklyn.

The patient was a delicate child eleven years of age, and the disease began with an acute otitis media in June. In September there was suppurative discharge, the meatus was filled with polypi, there was an opening over the mastoid surrounded by exuberant granulations, and containing carious bone, and the facial nerve was paralyzed. By December 1,

the discharge had ceased, the openings in the membrana tympani and mastoid had closed, and the paralysis had passed away. About the first of March the patient was quite suddenly attacked by vomiting and headache, there was not much fever or mental disturbance, no paralysis, and no indication of present disease of the ear. There was no swelling of the optic disks. Death occurred in the middle of March, and an autopsy revealed "the veins and sinus filled with fluid blood, the meninges injected, adhesions at points over the petrous portion of the temporal bone, some small amount of pus under the dura over the tegmen tympani, and in the sheath of the 5th pair; and an abscess containing an ounce or so of fetid pus in the left lobe of the cerebellum. The ventricles were free from pus, though dilated with excess of serum. Examination of the ear and mastoid revealed no positive sign of present disease of bone or soft parts, except a possible softening of the tegmen tympani." Dr. J. Orne Green referred to a somewhat similar case that had occurred in his practice.

In contrast to this case, Dr. C. S. MERRILL, of Albany, reports one of *Acute Middle Ear Inflammation, with Death on the Fourth Day from Extension of the Disease to the Brain*. The patient, a bookkeeper, 32 years of age, was previously in excellent health, and stated that he had never before had any disease of the ear. On the 7th of November he noticed a sense of fullness in the right ear and dulness of hearing. This was relieved by leeching and inflation, but early on the morning of the 9th, he was attacked with severe pain, and soon became delirious. A free incision of the membrane, which was bulging and proved to be unusually firm, gave exit to a large amount of pus. Death, preceded by coma, occurred at 6 P. M. on the 11th.

Post-mortem examination showed all the evidences of acute meningitis, and pus was found over the region of the petrous bone. There had been perforation through the roof of the middle ear. "The fatal termination of the case was evidently due to the direct extension of the inflammation to the membranes of the brain through the roof of the middle ear, which in this patient was not a solid plate of bone, but cribiform in appearance." The author believes that no other case has been recorded in which death occurred so soon after the development of inflammation in the ear.

A case of *Aural Polypus, Facial Paralysis, Mastoiditis, and Chronic Meningitis, with Recovery from the two latter*, is reported by Dr. R. J. MCKAY, of Wilmington, Delaware. There had been discharge from the left ear for seven or eight years. A large polypus was removed, but granulations remained. There was swelling of the mastoid, and the indications of brain disease were persistent headache, nausea, slight delirium at night, and optic neuritis. The mastoiditis and the brain symptoms subsided under leeching and the use of small doses of calomel and hypodermic injections of morphia.

Dr. E. E. HOLT, of Portland, Maine, discusses *Boiler Maker's Deafness and Hearing in a Noise*. "The basis for the opinion here advanced upon deafness incident to the boiler-maker is founded upon the examination of forty men from the shops for making steam-boilers in Portland; while what is said upon the subject of 'hearing better in a noise' is based upon a careful examination of all that have come under observation who made the claim that a noise improved their hearing, amounting to over one hundred cases that have been examined." The deafer ear in the cases of boiler-maker's deafness was always on the side more exposed to the sound, usually the left, and generally if the left ear was the better one

the patient was found to be left-handed. As the tuning-fork was heard well when placed against the teeth or head, the author concludes that the conducting apparatus, and not the nerve, is at fault. The membrana tympani showed about the same changes as in "chronic catarrhal otitis media" (proliferation?), and the naso-pharynx was invariably in a catarrhal condition.

Dr. H. says that all the men engaged for any length of time in this occupation become more or less deaf, and believes that the exciting cause of the deafness is the constant agitation of the joints of the ossicles exciting inflammation and producing ankylosis, particularly of the stapes. He does not tell us what is the cause of the accompanying naso-pharyngeal catarrh. Dr. Braudeis, in the discussion of the paper, suggested that something might be due to the fact that men who work in boiler-shops are subjected not only to a great noise, but also to great draughts and changes of temperature.

The author thinks that the claim of hearing better in a noise is the result of errors of observation, as he has never met with a case that stood the test of careful examination. He agrees with Von Troltsch that "misapprehension and lack of proper observation are generally at the basis of these statements."

Dr. S. THEOBALD records a case of *Complete Closure of both External Auditory Canals, following Chronic Otorrhœa*, and one of partial closure. The obstruction in both cases was bony, and existed at the outer extremity of the osseous portion of the canal. Similar cases were referred to by several other members of the society.

Dr. H. KNAPP, of New York, in a paper *On the Treatment of Aural Polypi*, comments upon the fact that large polypi are more easily and radically removed than small ones, and recommends mechanical removal only in the former class. Small polypi with broad bases or granulations he attempts to shrink, usually by the frequent application of alcohol and boracic acid, or prepares them for extraction by letting them grow until they have become pedunculated. He prefers the forceps to the wire snare. In the discussion of the paper Wilde's snare, the galvanic cautery, and chromic acid had their advocates.

Dr. R. C. BRANDEIS, of New York, contributes a paper entitled *Exhaustion versus Inflation, or Rarefaction of Air in the Meatus in the Treatment of some of the Diseases of the Middle Ear and Membrana Tympani*. He calls attention to the disadvantages of catheterization and Valsalva's and Politzer's methods of inflation, and claims that in some cases of retraction of the membrane and ankylosis of the ossicles, more good can be accomplished by the use of Siegle's pneumatic speculum.

G. C. H.

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ART. XXVII.—*Sarcoma and Carcinoma: their Pathology, Diagnosis, and Treatment*. By H. T. BUTLIN, F.R.C.S. 8vo. pp. 202. London: J. & A. Churchill, 1882.

THIS little volume is not an exhaustive or systematic treatise on sarcoma or carcinoma, or even a digest of our present information regarding them. It is simply a study of these neoplasms in their relations to cer-



tain organs or tissues of the body, and the author has selected the bones, testes, tongue, œsophagus, and tonsils for special consideration. Beginning with the testes, he has taken a number of cases from Continental, British, and American authorities, and has analyzed them with a view to finding whether they contain material of practical value for practitioners in general or surgeons in particular; and it is interesting to note that the author joins with the leading workers in pathology, in so far as he accepts the standard classification that took its origin from Virchow, and still maintains its reputation as our best working model.

If, in grappling with one of the most difficult topics in pathological histology, the author has succeeded in getting very little grain out of a large amount of chaff, the fault lies chiefly in the nature of the material. And it can have been no very easy task to have collected the forty-one cases that form the basis of the monograph (for such is the first and every subsequent chapter), and to have estimated the precise scientific value of each one. Indeed he can hardly have always succeeded in demonstrating to the critical reader the worth of his material, for in one instance at least, he assails an authority (Nepveu), impugning his evidence, and then in a subsequent place uses the same writer's cases as a basis for conclusions. He emphasizes, however, an important item, which has generally been known among pathologists, but which needs to be impressed upon the writers of surgical manuals. It is this, carcinoma is not in any one of its forms the most common of the malignant tumours of the testicle, but rather sarcoma, and in the ratio of two to one. Apart from this fact, which is mainly interesting in a pathological sense, the surgeon will have gained but little from the author's study of the organ, and he will be hardly better able than before to determine the character of the growth he purposes to treat. A single exception is worthy of mention, and this he finds when the growth has nodules that are cartilaginous to the feel. Should, in such case, the subject be a child, a diagnosis of sarcoma may be made with tolerable certainty. Evidently, then, this topic is one from which we have good reason to hope for much more precise information, nor will a perusal of this chapter be profitless, if it stimulates the surgeon or pathologist, or both, to greater care and thoroughness in the record of their observations, for there is no doubt that much of our present material is positively a bar to scientific inquiry, owing, on the one hand, to the imperfections in the clinical histories, or, on the other, to the errors in microscopic descriptions.

The second division of the author's subjects, which is made to occupy four chapters, concerns the neoplasms of bone and its coverings. Of 88 tumours having their origin between the periosteum and the bone, 28 arose from the femur. The following bones were attacked, the order of frequency corresponding to the order of enumeration: tibia, skull, humerus, pelvis, lower jaw, clavicle, scapula, rib, and radius.

The divisions of bone-sarcoma adopted are essentially the same as those in common use, but the term *osteoid* is rejected because unsatisfactory on the ground that *ossifying* or *calcifying* may always explain the proper condition. The term *osteo-sarcoma* is also objected to, on the ground that its significance differs according to the author who employs it. All primary malignant tumours of bone are sarcomas, is an axiom which is enunciated, but it is one that will certainly fail to receive universal acceptance.

With the consideration of *central sarcomas*, the author adds to his

three varieties of bone sarcomas, viz., the round-celled, the spindle-celled, the mixed, and a fourth, the myeloid or giant-celled.

The chapter on the tongue is interesting in this respect at least, that it illustrates the tendency certain organs have to be the seats of special forms of malignant growth. A record of 80 cases shows that carcinoma was the only kind of neoplasm, and epithelioma the only variety. So, too, the œsophagus was never attacked by sarcoma, for in the 59 cases enumerated there was but a single exception to the rule, and this a problematical one.

This little volume is certainly valuable in many ways, and merits careful reading. It is true that it adds little to our present stock of knowledge, but if deficiencies are shown, an important step has been taken towards remedying them.

Nothing appears clearer than that there is still great lack of material, or that the author has failed to find it. And good material is really wanting in many of the obscure fields of surgical pathology, such as have been brought under consideration. In them we cannot expect rapid or substantial progress until there is more intelligent co-operation among the many earnest and able workers that may now be found widely scattered in every part of the world.

T. E. S.

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ART. XXVIII.—*Cholera and Quarantines.*

*“Les Quarantaines dans la Mer Rouge et les Provenances de l'Inde.  
Extrait des Actes du Conseil Supérieur de Santé à Constantinople.”*

THIS interesting pamphlet contains the report of the debate on a communication opposing the quarantine restrictions on English vessels from India, addressed by the Governor-General of India to the Marquis of Hartington, Secretary of State for India, and presented to the Council by Dr. Dickson, sanitary delegate from England. This communication premises that all quarantine measures enforced in Egypt and at the Mediterranean ports, having in view the protection of Europe from an invasion of cholera from the East, are based upon two propositions enunciated by the Sanitary Conference of Constantinople, in 1866, and that of Vienna in 1874, to wit: that cholera originates in India and only in India, and that its manifestations in other places are due to direct or indirect importation from that country. Both of these propositions are questioned, and it is stated that the history of the disease, as shown by the annual reports of the health officers of the different provinces, offers an assemblage of facts of great value, which the conferences of Constantinople and of Vienna did not have the advantage of knowing. The paper then discusses the following questions: 1st. Do the Indian ports and the vessels sailing therefrom present a real danger for Egypt and the countries beyond? 2d. If so, can quarantine measures afford efficient protection against the danger? It is argued that if the relation between cholera and India be such as was believed by the two conferences the experience acquired during a long series of years on vessels from Bombay and other Indian ports, which have not been subjected to any quarantine restrictions, should have demonstrated the truth of the conclusions of these conferences, but this proof has not been found. Cholera existed in Egypt and in Europe in

1865. In 1866, it continued lightly in Egypt and thereafter ceased, while it effected considerable ravages in Europe until 1874. In fact, notwithstanding the pretended danger of vessels coming from India, Egypt has been exempt from cholera for fifteen years, although India during that period has suffered from deadly epidemics. The experience of the port of Aden is characterized as still more remarkable. It is in daily communication with Bombay and other Indian ports which are distant but a few days' journey, yet it has not suffered from the disease during the thirteen years from 1868 to 1880, and its history, so far as it is known anterior to 1865, confirms the experience acquired since that time. It is represented that the fears of an importation of cholera from India were based upon the theoretical views of the conferences and not upon facts.

The second question is not satisfactorily discussed in the Governor-General's communication. A complaint is substituted that the days consumed during the voyage are not included in the term of the quarantine, and it is suggested that the period of detention is in contradiction with the conclusions of the International Sanitary Conference of Vienna, which said that the period of incubation does not exceed a few days.

The council appointed a commission of three of its members to examine and report upon this communication from the British government. Its report was criticized by Dr. Dickson, and a long debate, continuing during several meetings, was the result.

We translate from the minutes of the concluding session :—

"The Inspector-General expresses himself in the following terms: An interesting and prolonged discussion has just put into the clearest light the permanent danger of the importation of cholera by way of the Red Sea, and has demonstrated the necessity of taking efficient measures against the danger within the limits of the regulations actually in operation.

"Leaving on one side the historical view of the case, which has been discussed by the opposing parties with both talent and tenacity, let us take the one unquestioned fact which has been brought into relief in the course of the argument. That is, that the cholera, a disease endemic in the East Indies, takes on an epidemic and invading character at periods more or less separated; that the Mussulman pilgrimage to Mecca carries it to, and propagates it in, the Hedjaz either directly from where it originates or indirectly by intermediary stoppages in the navigation between India and the Arabian ports, if it be not opposed by careful preventive measures.

"Experience has undoubtedly proved that cholera propagates itself in the absence of quarantine measures, or when these are inefficient, as for example in Egypt in 1865, and at Mecca in 1882, during the last pilgrimage. On the other hand, the success of quarantine is complete when it is rigorously applied as it was in Mesopotamia in 1879, and at El Wedj and Thor in 1881.

"It is asserted again that what is necessary for pilgrims travelling in crowds in badly arranged and unhealthy ships, impregnated with infectious miasms, is not required for ordinary steam navigation where good sanitary conditions are the rule. It is undoubtedly true that there has been no example hitherto of a ship without pilgrims on board being the means of bringing cholera into Egypt.

"The logical conclusions to be deduced from these teachings of experience are to be found in the following propositions which he (the Inspector-General) submits to the judgment of the council.

"1st. The Mecca pilgrimage ought to be carefully watched.

"2d. A permanent and thoroughly equipped lazaretto ought to be established on the shores of the Red Sea, to be used as a station for the examination of pilgrims before they are allowed to enter the Hedjaz.

"3d. Ships engaged in the pilgrim trade must submit to all regulations and to all the unexpected demands which may be necessary for their proper supervision.

"4th. On the other hand, ordinary navigation between India and the Red

Sea, in good sanitary condition, having no pilgrims on board, and not having had any signs of cholera during the voyage, has the right to come under the 'general regulation' issued in 1867.

"5th. Ships of the above class hailing from a port where cholera is epidemic will have the number of days occupied by the voyage counted in as part of their quarantine time, which will be completed by twenty-four hours of observation at the port of arrival.

"6th. If cholera does not exist in epidemic form at the starting or calling ports, free entry into the port of arrival is allowed to them.

"7th. What establishes the good or bad condition of a starting port, to give the right of free entry, or *vice versa*, is the presentation of a sanitary certificate, stating the presence or absence of cholera, or its complete disappearance, at the end of an epidemic.

"8th. The sanitary certificate is granted by the competent local authority. It is absolutely necessary that it should be *viséd* by Turkish consuls when the destination of the vessel is in the Ottoman Empire. If the certificate is irregular, the ordinary quarantine is applied, or a fine imposed, as the case may require.

"In the above propositions he (the Inspector-General) has looked at the Indian traffic and the Red Sea quarantine purely from a practical point of view, without regard to the dispute as to how cholera was introduced into the Hedjaz in 1881, whether directly from India or indirectly in some other manner.

"What is absolutely certain and undisputed is the fact, that when cholera exists in the countries which send out pilgrims, these latter bring it into the Hedjaz. To prevent its introduction in such manner by wise regulations strictly enforced, without at the same time touching the general interests of commerce, is the duty and the aim which the International Council of Health and the administration have at heart.

"The Inspector-General (Bartoletti Effendi) invites the members of the council to give their opinions on what he has just proposed.

"The council adopts unanimously the propositions of the Inspector-General in reply to the communication of the English government, which was presented by Dr. Dickson, and declares the discussion at an end.

"Session of the Council of Health, 5th December, 1882."

C. S.

ART. XXIX.—*A Record of eleven years of the Mission Hospital of Foochow, China, and four years of the Foochow Opium Asylum.*

THROUGH the kindness of Dr. H. T. Whitney, now in charge both of the general hospital, and opium asylum of Foochow, the reviewer has been put in possession of a full series of reports of both institutions, which contain many points of interest to the physician, surgeon, and philanthropist. These are here presented in a condensed form to the reader, showing the prevalent diseases of the Chinese; the character and results of the surgical operations performed upon them; some of the peculiar medicines of the natives and their medicinal formulæ; and the effects of the opium habit and opium cultivation upon them.

Foochow is a large seaport, and contains, as nearly as can be ascertained, over 600,000 inhabitants. Its *chief export* is tea, and its import, opium. It consists of a fortified portion, inclosed by a wall, twelve feet thick and thirty feet high, pierced with seven gateways; an extramural suburb; and a fluvial portion, the inhabitants living in boats. The hygienic conditions of the city are bad; the people uncleanly; there are no public bath houses; and paludal diseases, especially intermittent fever, are prevalent.

"Western medicine" was introduced into Foochow, in 1870, by the late Dr. Dauphin W. Osgood, under the auspices of the A. B. C. F. M., who commenced by opening a dispensary on the main street leading to the island of Nantai, an important suburb, which was soon followed by another on a second busy street. From this out-door service there very soon grew a necessity for a hospital, and patients were received into a building rented for the purpose. This in time developed into a general hospital, for which purpose a frame building was erected in 1877-78, at a cost of \$1800, capable of accommodating from 50 to 60 patients. It consists of a main building containing eleven rooms, a separate culinary department with three rooms, and a gate-house. The rooms in the main building are seven for free patients, one for pay patients, two for hospital assistants, and one for operations. Two dispensaries are still kept in operation, one at Hapwoka and the other at Watergate, and patients prescribed for on Mondays, Tuesdays, Thursdays, and Fridays. These are under the care of the physician in charge of the general hospital, and are very largely patronized.

The demand for treatment of opium cases desiring to reform, and the necessity for a temporary seclusion to effect a good result, caused the opening of a special Opium Asylum in 1878. This is independent of the hospital in one sense, as it is self-sustaining, but is under the same medical supervision. It has had as high as 540 inmates in one year (1878-79). Besides these medical establishments in Foochow, there is also a female hospital under the care of the Misses Drs. Trask and Sparr.

*Service of Dr. Osgood.*—As stated, his medical work in Foochow commenced in 1870. His first annual report is dated June 1st, 1872, and the fiscal year of the present hospital commences with that date. Dr. Osgood first admitted opium cases into the rented hospital in 1876, and the last Opium Asylum report (its fourth) is really the sixth. He had opium smokers as patients from the first year of his labours, in 1870; his first report showing a record of seventeen. In all, he had 1758 cases of the opium habit and 103 cases of suicidal opium poisoning. This subject will be more fully examined hereafter. Dr. Osgood had just completed his ninth annual report, in which he gave a tabular record of all his work, and had read the last proof of an anatomical treatise in the Chinese language, when he was taken sick, and died on August 17th, 1880. He was a large, vigorous man; earnestly devoted to his work, and is said to have been remarkably dexterous in the use of the knife. He was a good Chinese scholar, and his loss to the cause of medical education in China was severely felt. In character he was a very decided Christian, and his belief largely influenced his medical activity. He had under care 51,838 cases in Foochow, and performed over two thousand surgical operations, of which 47 were amputations; 26 removals of the scrotum, the heaviest weighing 50 pounds; 181 removals of tumours; 3 extirpations of portions of the lower jaw; 10 removals of the eyeball; 42 were for cataract; 50 for hare-lip; and 9 were resections of joints, or long bones. As an evidence of the prevalence of two maladies among the Chinese, I will mention that he operated upon 370 cases of fistula in ano, and 240 of hydrocele, in ten years; he also operated 486 times for entropion. This last disease would appear by this to be much less prevalent than in Canton, where the cases average one a day in some years. Stone in the bladder, so very prevalent in Canton, is very rare in Foochow, only eight cases having been reported in ten years' service.

*General Hospital Dispensary and Service, 1871-1882.*—Dr. Osgood was succeeded by Dr. H. T. Whitney, a graduate of the University of New York, who was first stationed at Shaw-wu, in 1876, where he treated over 5000 cases, and had been a few months in charge of the dispensaries of Foochow, when Dr. Osgood died; the reports of 1880-81 and 1881-82 were prepared by him, including the third and fourth reports of the Opium Asylum. As might be anticipated from their habits, the diseases of the skin are the most abundant of all the maladies among the Chinese in Foochow, who through the dispensaries on prescribing days. The total of all the cases reported amounts to 14,385, of which scabies and eczema constitute a large proportion, particularly the former, which amounted in one year to 986. In the two years' service of Dr. Whitney, a special record has been kept, showing 860 cases of itch and 227 of eczema in 3393 patients having skin diseases.

*Prevalent Diseases.*—Acute and chronic rheumatism, chiefly the latter, is the most prevalent of all the general maladies, 3763 cases having been under treatment by Drs. Osgood and Whitney. The Chinese are very much exposed to the weather in their avocations, and often work in water in their agricultural pursuits; their clothing is very inadequate; their food imperfectly assimilated; and they have but little knowledge to fit them to guard against disease. Next to rheumatism stands *dyspepsia*, with 3133 cases under treatment. This disease is to some degree, almost universal among the poor of China, whose food costs on an average from \$1.50 to \$2 per month, and consists of rice or dried potato and turnip-tops or other greens, fried in oil, with a little dried fish or bean-curd. This diet is eaten hurriedly and is often bolted down without mastication. With the dyspepsia is often associated constipation or diarrhœa, and the presence of numerous long, round worms (*ascaris lumbricoides*), and fistula in ano, as already shown, is very prevalent. Next in order, according to the reports, is *bronchitis*, which is often associated with asthma, and prevails in a chronic form to a large extent among opium-smokers; the number of cases treated was 2166. *Intermittent fever* in its different types is next in order of frequency, with 1317 cases. The Chinese have learned the value of sulphate of quinia and use it with several other medicines now sold by them, such as *tinct. ferri sesquichlor.*, Fowler's solution of arsenic, antonine, and iodine. *Phthisis* is much less abundant than might be supposed, considering the delicacy of appearance of the Chinese and the prevalence of bronchitis and fistula in ano; the cases recorded amount to 272 in twelve years, or less than half of one per cent. of the medical cases. Cases of hæmoptysis of a non-tubercular character are not uncommon, and are ascribed by Dr. Whitney to the presence of a parasite. *Elephantiasis* appears by the record to be almost as often met with as phthisis, the number treated reaching 230. *Hernia* is a very common affection, 787 cases having been observed, as follows: double, 77; right inguinal, 534; left, 176. The prevalence of the *ascaris lumbricoides* is shown by a record of 858 cases. Syphilis and gonorrhœa are, of course, very prevalent; the cases of the former numbering 1356; the latter less than five hundred.

*Rare Diseases.*—Hydrocephalus was met with but once out of 40,000 cases of disease; the patient was a boy of seven years, with a head double the normal size. Tetanus was observed in three cases. Insanity is said to be comparatively rare (?), but it is impossible as yet to ascertain the exact truth. Suicides are frequent; intemperance very exceptional; there is no intermarriage; and the people seldom fret or hurry; the insane are

secluded privately, and it is said are not infrequently put to death by their relatives. Dr. Whitney, having had an experience as an alienist, will probably in time discover the truth of this question. He reports 32 cases for his two years' service; Dr. Osgood but 21 in ten years.

*Surgical Cases.*—The most common of all injuries resulted from beating, of which 1990 were under treatment: then incised wounds, 306; and, third, bites of animals, chiefly dogs, and human beings, 95. Human bites are often very severe, and are followed by much suppuration and destruction of tissue; the lacerated parts appear to be affected poisonously. Dislocations were treated in 51 cases; fractures in 42; punctured wounds in 65, and gunshot in 35.

*Surgical Operations.*—The native Chinese physician, unless in a very exceptional case, never uses a knife, not even to open an abscess; never pulls a tooth; sets a fracture with any accuracy, or reduces a dislocation. The patients are then by training, custom, and natural timidity, averse to operative surgery; and are specially opposed to the loss of a limb for the relief of suffering or saving of life. They have besides an idea that if the body is mutilated in this world it will be imperfect to the same degree in the next. Friends often interfere against operating, and the patient must be left to his fate. The amputations for twelve years have been as follows: of the thigh 2; at the knee 1; of the leg 1; foot 3; toes 12; at the shoulder 1; of the arm 6; at the elbow 1; and of the fingers 26 = 52. The deaths were as follows: amputation of toe 1, resulting in an attack of phlegmonous erysipelas; amputation of arm 1, in a month, cause cancer; amputation of thigh 1, death from exhaustion; limb gangrenous at time of operation, which had been previously amputated at a lower point.

As an evidence of the disparity of numbers between those making application and submitting to operations, we have only to mention a few of the more numerous surgical maladies, viz., patients with entropium 609, operated upon 304; with pterygium 255, operated on 83; with fistula in ano 772, operated on 463; and with hydrocele 87 operated upon out of 292. Cataract cases show the same difficulty, as only 53 out of 305 were operated upon. Not half of the tumour cases, even where the growth is fatty and easily removable, will submit themselves to the knife. Elephantiasis of the scrotum has been removed 33 times without a death; and the same has been the result of the operation in China in more than double this number of cases. The Foochow record shows that 92 patients applied for treatment in twelve years.

*Deaths.*—Of 2463 patients in the general hospital in twelve years, 14 have died, one each, of the following diseases: Chronic bronchitis, an old man; aneurism; erysipelas after removal of toe; ascites, admitted in extremis; ovarian dropsy, on third day after second tapping; tertiary syphilis; hemorrhage after lithotomy; cancer; resection of head of femur in a child; tetanus; dysentery, patient admitted in a dying state; kidney disease, admitted in extremis; exhaustion, after a second amputation; and anæmia and exhaustion eight days after the removal of a malignant tumour of the parotid gland.

*The Opium Asylum.*—As already stated, opium cases have been under treatment for reformation in Foochow since 1870. The last published record shows that up to June 1, 1882, 2139 had been received. Besides these, 123 cases of opium poisoning were visited at their own homes. The opium habit of the Chinese has been written upon by many travellers; business men temporarily residing in China, missionaries and physicians,

generally in condemnation of it, but in some instances quite the contrary, the practice among the upper classes being regarded very much as the moderate use of wine in social life is generally thought of here. This question has been taken up in quite a number of the annual reports of Dr. Kerr, of Canton, and Drs. Osgood and Whitney, of Foochow, all in condemnation of the practice of opium smoking, in whatever class it may be indulged in. As it is well to let these gentlemen speak for themselves, we will present abstracts from their own writings.

Dr. Kerr, Report of 1868:—

"The increasing prevalence of this habit, the enormous expense it entails upon the people, the dreadful suffering it inflicts upon its victims, the poverty and want which follow its indulgence, and the moral corruption which it causes, should excite the sympathy of all men. I am persuaded that no man could witness what I see, week after week, and month after month, in the prescribing room, without being convinced that it was a terrible evil, against which all friends of humanity should wage a war of extermination."

"The opium-smokers' ward of the hospital furnishes facts which cannot be disputed. For any one who wishes to study the subject, no better place can be found. The statistics," kept of each patient on the hospital books, "show, that the monthly expenditure varies in different cases from \$1.50 to \$15.00, and it must be noted that this expenditure is constant, or steadily increasing, and only diminishes under the pressure of poverty." (Report of 1875.)

That Dr. Kerr's opinions are not based entirely upon an experience with the poor, we have only to refer to his record of 1864, in which he reports the cases of two young men, one "a literary graduate of the first degree," the son of a wealthy widow lady; and the other, the son of a mandarin, admitted at the age of 24, after indulging in the habit for five years.

Dr. Osgood:—

"The evils resulting from the continued use of opium, have never in my opinion been overrated. The stranger in passing through the treaty ports, and the merchant who has no intercourse with the mass of the people are not in a position to give a fair opinion upon the question." "The well-to-do Chinaman who has good food and warm clothing, suffers less from smoking than the workingman who not unfrequently foregoes his food and clothing to secure his accustomed allowance of opium. Rich and poor alike find that the continued use of opium interferes with digestion, diminishing the secretions of the alimentary canal, producing constipation, loss of appetite and the usual discomforts of dyspepsia. In nearly every case there is difficulty in breathing, and in many, chronic bronchitis, and asthma. The smoker becomes anemic and impotent." (Report of 1877.)

"I am free to admit that there are cases where opium is used constantly for twenty or even thirty years in small quantities, with comparatively little injury to the user, but these cases are the exception and not the rule. It is also true that a given amount of opium smoked is less injurious than when swallowed. *I have never yet heard a heathen Chinaman defend the use or sale of opium, but on the contrary they universally condemn them.* The only apologists for the use of opium have been representatives of Christian lands, many of whom have had but little practical knowledge of the evil resulting from the opium." (Report of 1879.)

Dr. Whitney:—

"The secondary effects are, inertia of mind and body, corrupt morals, impotence, disease, destruction of home and family, and finally beggary and death." "Many of the petty officials, soldiers, yamen runners, and officers' attendants and servants use opium, but the higher and better class of officers condemn it in the strongest terms." His excellency Li Hung Chang, Prime Minister of the Chinese Empire, thus expressed his views in 1878: "The evils arising from opium smok-



ing are very great. All benevolent persons are greatly distressed thereby. The Emperor has frequently sent down his commands to prohibit the growth and use of opium in China. The difficulty of enforcing these prohibitions arises from the fact that the importation and sale of the foreign grown is legalized in the treaty on the payment of the duty." (Report of the Opium Asylum for 1880-81.)

"If we consider the rapid increase of opium culture in China and the consequent turning of large plains, formerly devoted to raising cereals for food, into poppy fields, and that this grain-raising labour is also turned to the production of opium, and that, as the statistics show, this class of labourers is largely given to the use of this drug, we have a still stronger indication of evil-foreboding to this country unless something is done to stay its progress and avert its certain results." (Opus cit., page 21.)

*Prevalence of the Habit.*—This is very difficult to ascertain. It has been computed, that about four per cent. of the Chinese smoke opium, but this is simply conjectural; in certain parts of entry, and among certain classes, the habit is wide-spread. Foochow is said to have more opium dens than rice shops. Dr. Osgood computed the opium smokers among men, at 45 per cent., 30 per cent. being *confirmed*, and 15 per cent. *occasional*. Of chair coolies, boatmen, and the attachés of official establishments, it is said that from 50 to 75 per cent. smoke opium. Very few women ever smoke it.

*Amount of Opium used; its strength and cost.*—The Chinese weights are the *Candareen*, equal to  $5\frac{1}{2}$  Troy grains; the *Mace*,  $58\frac{3}{16}$  grains or nearly a drachm; and the *Tael*, 583 grains, or 10 mace. The Chinaman smokes a prepared extract, which is said to be nearly three times the strength of the crude drug. According to the record kept in the Foochow Opium Asylum up to June 1, 1882, the amount used ran from one candareen a day, to a tael, and the average of 1789 men's daily allowance was 3 mace. Dr. Osgood computed the average at about 2 mace: Dr. Whitney rates it much higher. We go by the record, which makes 1789 men consume 5056 mace *per diem*, or a slight fraction below three mace each. A mace costs usually 100 cash, or  $8\frac{3}{4}$  cents, and the average labourer gets from 20 to 25 cents *per diem*. The inmates of the asylum have been largely composed of storekeepers (515), farmers (460), artisans (194), and soldiers (189), or 1358 out of 2133. A labourer usually smokes up at least half of his wages, his average being one and a half mace, costing thirteen cents.

*Origin of the Habit.*—It was claimed a few years ago, by one who professed to have carefully investigated the subject, that at least sixty per cent. of the Chinese commenced to smoke opium for the purpose of increasing their sexual desire and capacity; but this is not at all the opinion of Dr. Osgood or Whitney. The latter questioned 287 patients, and gives the origin of their habit, as "temptation and pleasure" 181, and "disease," 106. He says, in his report of 1881-82:—

"By temptation and pleasure are meant those who acquired the habit through the pleasant sensation of an opium-intoxicated state, which I find upon a somewhat extensive inquiry to have been begun in the majority of cases through the urgent invitation of a friend who had already acquired the habit, and that afterward the remembrance of the pleasurable sensations incited to a repetition of it until it finally became a habit." "So I think in reality temptation is the beginning of nearly all opium smoking aside from disease. But as very few care to confess that they were drawn into the habit by others, they more invariably give the reason as *pleasure*, when in fact it was *temptation*. Under *disease*, a large variety of complaints are given, such as cough, dyspepsia, diarrhoea, dysentery, hemorrhoids, stomach ache, seminal emissions, backache, gonorrhœa, hydrocele, asthma, rheumatism, etc."

In the great majority of cases, the habit is contracted between 15 and 35 years of age. The classes and ages of these habitués "represent the strength and thrift of the country" as a general rule, and hence the prevalence of the habit gives a dark background to the future of the Empire. The cultivation of the poppy plant has extended into Manchuria, and over fourteen of the eighteen provinces of China proper.

*Treatment of Cases in the Asylum.*—In his last annual report (1879-80), Dr. Osgood thus writes: "The plan of treatment followed in the Opium Asylum consists: 1. In confining the patient in the building for the first week. 2. In the total abandonment of the opium from the commencement of treatment. 3. In attention to the diet, giving food in small quantities frequently." Dr. Whitney says of this: "The diet for the first five days should be simple but nutritious, milk, congee (rice-water and chicken soup) and eggs, beef, chicken and mutton teas," "rock candy and a few kinds of fruit work well." 4. "Chloral hydrate 20 grains every hour as required, for the first two or three days. This is only given to the extent of relieving the suffering of the patient. Bromide of potassium, quinine, iron, tonics, astringents, all have their appropriate places."

The suffering lasts usually from one to five days, and the habit is broken in from four to seven days. After ten days they are generally anxious to be discharged, and this is granted except in extreme cases. Each man on his admission deposits two dollars security, one of which is returned him if he remains until discharged. From 60 to 80 per cent. are believed to be reformed. The smoking habit is much more rapidly eradicated than the chewing one, which is quite rare with the Chinese. There were 15 chewers among 984 patients, admitted up to June 1, 1879, who took from 5 candareens (29 grains) to 3 mace (175 grains) of prepared opium, a day. A Buddhist priest who smoked an ounce of opium daily, was discharged in ten days; his craving for the drug having disappeared in that time.

*Chinese Medical Practice* is referred to by Dr. Osgood in several of his reports, which show it to be upon a par with that of Europe five hundred years ago. Although they use rhubarb, gamboge, gentian, catechu, and other legitimate remedies, the Chinese nostrums are often of the most disgusting character, and their whole system of medication is empirical in an extreme degree. Dr. Parker gives a specimen of their best surgical attempts upon a patient from whom he removed a large glandular tumour of the face in 1851, which had been growing for seven years, attaining a size of  $2\frac{1}{2}$  feet in circumference. Dr. No. 1 punctured the mass with an iron probe, causing it to bleed profusely, after which he inserted a wire seton to excite suppuration and thus "dissolve the growth." This produced such agonizing pain that it could only be borne a few days. Dr. No. 2 applied medicinal cakes to rot it away, causing a deep sloughing and a profuse purulent discharge. Dr. No. 3 made great pretensions to skill in curing tumours. He thrust in a small knife to the depth of several inches, intending to cut away the tumour and then apply a plaster; but he produced such a hemorrhage that the man nearly lost his life. The native method, according to Dr. Osgood, of curing a dog-bite is to draw a circle around the wound and write the word for Tiger in it, the tiger being more than a match for the dog. Consumption is treated by various remedies, one of which is prepared by boiling a placenta in an earthen urinal which has seen long service, for two hours, when it is to be made into pills or eaten in substance. Believing in the *similia similibus curantur* theory, and mistak-

ing the purring of a cat for asthma, they administer the excrement of the animal for this disease. Believing also that syphilis and various ulcers are due to some malignant poison in the body, they prepare a nostrum known as "the five poisons," which they administer in pills. It is composed of dried snakes pulverized one ounce : wasps and their nests, half an ounce : centipedes three ounces : scorpions six ounces : and toads, ten ounces, ground up and mixed with honey, and then formed into pills. In a Chinese *Materia Medica*, in which are cuts of over three hundred medicinal plants, Dr. Osgood found "bat excrement," as a remedy for cataract, ague, eczema, opacity of the cornea, and abdominal pains. "*Dog flesh*" that of a yellow animal for dyspepsia, and of a black one for kidney diseases. "*Urine of the white horse*," for worms, obstinate vomiting, and loss of appetite, etc. etc. : with others still more disgusting. In his report for 1875-76, Dr. Osgood reproduces several rude cuts giving the conjectural human anatomy of the Chinese, which are very curious, and wide of the truth. The cholera year (1877) produced some singular plans of treatment, one of which was to rub an earthen spoon with tea oil ; then rub the patient's spine with it until small black spots appeared, which were to be punctured with a needle down to the bone ; after which a dose of salt, ginger juice, and boy's urine, in hot water, was to be administered.

Dr. Osgood says in conclusion : " We only make mention of a part of this class of medicines. If any are disgusted by the mere account, let them think how much worse it would be were they obliged to take them internally. We would be glad to have those good people in New York and San Francisco who have patronized the itinerant Chinese quacks, read these notes, and trust they may get good from the reading." Think of privy maggots, washed, dried, fried, pulverized, and made into pills, as a cure for worms, syphilis, vomiting and skin diseases ; and of the scrapings of old commodes as a remedy in the after-treatment of parturition. It is not to be wondered at, that efforts are being made to educate the Chinese in medicine, and that every foreign managed hospital is the nucleus of a future medical school. The demands for a legitimate medical treatment on the part of the Chinese is shown by the following evidence. Mr. Jeremiassen a Dane, formerly in the customs service at Formosa, studied medicine under Dr. Kerr at the Canton Hospital with great diligence for seven months, during which time he must have seen some thousands of out and in patients. He then took a tour of two and a half months through the coast towns of the large island of Hai-nan, making its entire circuit. At every town, patients flocked to see him for advice, the maximum number in one day being four hundred. He performed numerous minor operations, that for *entropium* being the most abundant. It is his intention to continue his studies at Canton, and then establish a medical mission at his own expense in Hai-nan. The cost of building and maintaining a hospital in China, is fabulously low. In the Swatow Hospital, where the free patients provide their own food, there were last year 2872 patients : and the whole expenses of the institution amounted to \$2318.48. There were 665 operations performed upon the eye ; and 385 on the body generally, 53 being for the removal of tumours.

R. P. H.

ART. XXX.—*Fistula, Hæmorrhoids, Painful Ulcer, Stricture, Pro-lapsus, and other Diseases of the Rectum: their Diagnosis and Treatment.* By WILLIAM ALLINGHAM, M.D., F.R.C.S., etc. Fourth revised and enlarged edition, with illustrations. Large 8vo. pp. viii., 168. Philadelphia: P. Blakiston, Son & Co., 1882.

IN turning over the pages of this volume the first point we notice is the enormous preponderance of cases of fistula over all others treated in the author's special hospital: 1208 out of 4000, while of hæmorrhoids there were but 965 cases. The reliability of this apparent contradiction of the usually accepted belief that hæmorrhoids constitute the most common disorder of the rectal region has been called in question, but the author maintains that it is correct, and the records of a large hospital with which we are familiar show the ratio of fistulæ to hæmorrhoids to be high enough to make us very ready to accept what at first gave us the impression of being contrary to our own observation.

With this we pass on to the chapter on examination of patients, which is most excellent, recommending an orderly and thorough method, and giving a timely caution against being too ready to try Simon's method of exploration of the rectum. Incidentally the author states that he has sewed up three recto-vesical fistulæ "made by experienced surgeons in performing lithotomy." If so many accidents of this sort came to be reported by one specialist, how many may there be in all?

Under the head of "fistula in ano" a number of cases of spontaneous cure are cited, and a number where the application of carbolic acid effected a cure—but most of these were not fistulæ but *sinuses*, incorrectly termed "blind fistulæ." The elastic ligature is recommended to be used when patients are timid, and when it is certain that there is but one sinus. The author's preference, however, is for slitting a fistula open into the bowel, and he describes the best method of doing this and its attendant details with clearness and precision. Noteworthy is his recommendation of M. Salmon's "back cut"—dividing the wall of a sinus, opposite to where it has been split. We find that he recommends packing the sinus after it is slit. Mr. Henry Smith, of London, distinctly warns against *packing*, but will have lint or cotton *laid* snugly, but without exerting pressure, in the track of the sinus. If the object be to check hemorrhage we agree with the author, but if there be no considerable bleeding, with Mr. Smith.

As to operating when phthisis coexists, Mr. Allingham does not show the usual fear of untoward consequences; and he explains that some phthisical persons do badly when subjected to any operation, but in the majority of cases they will do as well after operation for fistula as could be expected of any broken-down patients, though the mere act of coughing is prejudicial to the healing of a fistula.

When speaking of hæmorrhoids, the author sensibly calls attention to the fact that "the anus requires quite as much washing as any other part of the body." He might have said more without stretching the truth.

For internal hæmorrhoids excision is said to be "one of our best operations," though not applicable to very large or very numerous piles. Carbolic acid injections are dismissed with a tone of prejudice which corresponds with the author's evident ignorance of how they should be used and what may fairly be expected of them. Dr. Kelsey, of New York, in his newly published book on this subject, says of this method, that he has

used it many times, and, except in one case, has never had cause to regret using it. Mr. Henry Smith's clamp and cautery method the author also dismisses with his disapprobation. It is, he says, six times as fatal as his own method. Crushing he thinks better of. The method known by his own name—which was, however, devised by M. Salmon, to whom he duly credits it—is described in full, and of course recommended as the best. And so most surgeons consider it.

The chapter on "*procidencia recti*" stands for what on the title-page is called "prolapsus." Why these titles should not correspond we do not see, nor why both should not be put into English. The substance of the chapter might be improved by making clearer distinction as to the different varieties of prolapse.

Polypus and pruritus are next taken up, and then follows a chapter on fissure and painful ulcer. This is one of the best chapters in the book, distinguished for its practical character and good sense. The chapter on ulceration and stricture of the rectum is largely controversial, and much space is devoted to defending the view—now pretty generally adopted—that strictures are usually dependent upon malignant new formation or syphilis. Either colotomy or linear rectotomy is the operation recommended for this condition.

For cancer the author has excised the rectum in its whole circumference only six times since the middle of 1879. This is because of the bad results occurring in his experience and observation. Of sixteen patients thus treated by him only one is living, and he in a miserable plight. The choice between excision and colotomy depends upon circumstances which are by no means clearly stated by the author, and he evidently considers the prospect after either to be gloomy enough to prevent any surgeon from undertaking it with alacrity.

Rodent ulcer, villous tumor, neuralgia, and inflammation next receive brief attention, and the book is finished, with the exception of a very poor index, where for example, we find "Acorns, powdered, for diarrhœa of procidencia," and no reference whatever to "diarrhœa" by itself or under the heading of "procidencia." It is a pity that our transatlantic brethren have not yet learned the art of indexing; for a good index would be a valuable exchange for half of almost any book that ever was written.

Beyond what has been said we have little to remark about Mr. Allingham's book. It has received such practical recognition that he might be tolerably indifferent to a reviewer's praise or blame. Yet we cannot forbear adding that we think it would contribute to his reader's pleasure and not diminish his own profit if he would, in his next edition, leave out the occasional evidences of prejudice and ill-will which can be found in this one. For it is a pity that any such blemishes should be found in a book so admirable in many respects, so invaluable to any one who has to deal with disorders of the rectum and anus either as a writer or as a surgeon.

C. W. D.

ART. XXXI.—*On Slight Ailments, their Nature and Treatment.* By LIONEL S. BEALE, M.B., F.R.S., Prof. of Medicine in King's College, London. Second edition, enlarged and illustrated. 8vo. pp. 283. Philadelphia: P. Blakiston, Son & Co., 1882.

"MANY of us, while in perfect health, might leave our pocket handkerchiefs behind without experiencing inconvenience, but when suffering from a cold it is well not to be neglectful. A quantity of secretion is poured out from the mucous membrane of the nose, and in many cases also from that of the windpipe and bronchial tubes." (p. 213.)

Most sage counsel, worthy of a father of medicine. Why? Because all parents desire habits of neatness in their children. The children of to-day, *i. e.*, students and young practitioners, are the men of to-morrow, and we feel that their leisure moments would be profitably employed in the perusal of this work. That its teachings are orthodox, no one who reads the above extract can doubt. Attention to detail characterizes each page, and all the sections. But if its counsels are homely and perhaps trite, they are, at least, quite correct, and the practice is based on approved standards. The new edition does not materially differ from the old. The table of contents comprises sections as follows: Peculiarities of the tongue in slight ailments; offensive breath; nausea; indigestion, its nature and treatment; constipation, and its treatment; diarrhoea; vertigo; biliousness and sick headache; neuralgia and rheumatism; the feverish and inflammatory state; the actual changes in fever and inflammation, and common forms of slight inflammation, including sore throat, conjunctivitis, etc.

E. T. B.

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ART. XXXII.—*Health Reports.*

1. *Fourth Annual Report of the State Board of Health of Illinois.* 8vo. pp. 245. Springfield, 1882.
2. *Seventh Report of the State Board of Health of California.* 8vo. pp. 128. Sacramento, 1882.

1. THE volume from Dr. John H. Ranch, the indefatigable secretary of the *Illinois* board, although it contains some 200 pages of fine print, is in reality a *health report*, being altogether made up of records of the work of the board, without any of the supplementary papers upon diverse subjects, which appear to be generally deemed necessary to give the annual publications of State boards of health a sufficiently imposing and bulky aspect.

Accounts of the meetings of the board, of questions propounded to candidates for its licensing certificate, of the organization and enforcement of an immigrant inspection service as a guard against variolous infection, and the successful stamping out of smallpox in over one hundred and fifty localities in the State, together with those of the prominent part taken in the Sanitary Council of the Mississippi Valley by the Illinois representatives, are all interesting and important, but the great work of the year, as many of our readers are aware, has been that immense service to the whole medical profession, the compilation of a full report on the medical educational institutions of this continent, in order to determine which are and which are not in "good standing" at the present time.

According to this voluminous and invaluable document, constituting a directory of American medical colleges, the details of which have been obtained "from the published announcements last received, and from other available sources," there have been 175 institutions granting medical diplomas or licenses in the United States and Canada, since the year 1765 up to the present date, and of these 119 are still in existence. Diplomas from 123 of the total number of these schools have been presented before the Illinois State Board of Health, of which number 99 have been recognized as "legally chartered medical institutions in good standing," 5 are accepted conditionally, and 18, the titles of which are given in full, are rejected.

This exhaustive directory of the reliable and unreliable medical schools in our country is obviously the product of a vast amount of pains-taking investigation, and as such is worthy of high praise. Its highest value, however, to all lovers of true medical science lies, of course, in the grand movement in favour of elevating the standard of medical education which it renders possible—a movement which, now that it is happily inaugurated by the Illinois Board of Health, promises, if ably seconded by other State authorities, to wipe out the burning disgrace of our profession here in America, accomplishing that purification and ennoblement of medical teaching here, in which the Association of Medical Colleges has, year after year, so signally failed.

2. From the *California* Report we learn that during the year 1881 the State was subjected to the very low mortality of only 13.65 (?) per 1000, notwithstanding its people were compelled to struggle with emanations from the great smallpox epidemic, which has proved so fatal on the Atlantic coast. So far this contest has been waged so successfully that in the year only 75 deaths are attributed to variola. The most fatal disease of the zymotic class was typhoid fever, although diphtheria was the cause of death in 87 instances. Reasonable complaint is made by the permanent secretary, that the admirable inquiries into the condition of hospitals and jails throughout the State, does not meet with as full and complete a response in every instance as could be wished, although it is to be hoped that county authorities will hereafter be more careful in these particulars. About 16 pages of the volume are occupied with an account of the various outbreaks of smallpox and the measures adopted to prevent the spread of this disease. Considerable space is devoted to the subject of railroad inspection and quarantine, an instructive example of the latter occurring at Truckee being minutely detailed.

An appendix, which constitutes nearly half the book, is made up in the usual way of papers contributed by physicians and others interested in sanitary subjects. In the first of these, "On the Southern California Channel Islands as Health Resorts," Dr. J. P. Widney claims that their peculiar merit is, that while lying within the line of a semi-tropical climate, they are entirely exempt from the scourge of yellow fever and the ordinary Southern diseases; and their comparatively small size and their distance from the mainland save them from strong sea-breezes and coast fogs, and secure for them a remarkably equable temperature. Brief *résumés* of opinions from leading sanitarians upon their respective subjects are given in articles on "Sanitation in Schools," by Dr. C. W. Breyfogle; on "The Pollution of Rivers," by Dr. F. W. Hatch; and on "Factories as Sanitary Agents," by Dr. J. P. Widney; Dr. F. W. Hatch also contributes a valuable paper on "The Seaside Health Resorts of California," in which he gives the usual preference to Santa Barbara, and San Diego, and which

is well worthy the careful perusal of any intending visitor to or prescriber of this delicious climate. In the following essays Dr. Breyfogle pleads for the establishment of a State inebriate asylum; Dr. W. R. Cluness complains bitterly of the "Animal Food we Eat," urging most judiciously the more thorough inspection of animals, both before and after they are slaughtered; and Dr. H. Gibbons concludes with the oft-told tale of human ills depending "On intoxicating drinks."

J. G. R.

ART. XXXIII.—*A Supplementary Catalogue of the Pathological Museum of St. George's Hospital: A Description of the Specimens added during the Years 1866–1881.* By ISAMBARD OWEN, M.D., Curator. 8vo. pp. xxxiv., 284. London: J. & A. Churchill, 1882.

CATALOGUES in general, like dictionaries, are not regarded as interesting reading, and this criticism is just in most cases. They are devoid of the plot of the time-honoured novel, and the subject changes too frequently for a sustained interest. All this is true of most catalogues, but we claim a most decided exception in the case of a well-made catalogue of a pathological museum. We claim an especial exception in favour of the catalogue before us.

The well-written catalogue of a carefully selected museum is sure to carry the reader back to the hours of work spent in the dead-house, the laboratory, and the museum, and how full of suggestions are the brief clinical histories appended to the specimens! No one can take up such a catalogue, even for a moment's glance, without being instructed in one's daily routine of medical practice. Such at least was our experience with the volume before us while cutting its pages, and still further instruction was gained after a careful study of its contents.

No one knows, until he has put pen to paper, how difficult a task it is to make a good catalogue. The writer of such a volume is, perhaps, the least competent person to judge of the value of the work when it is completed, so that we feel it especially incumbent on us to express our satisfaction from an examination of the one before us. Knowledge of the subject and familiarity with the specimens do not insure a good result, and it is not always the graphic and pieturing pen which makes the most interesting, and at the same time useful, catalogue of a museum.

A photograph (in words) will not replace the knowledge to be obtained from an examination of the specimen; therefore the description should not go beyond the points which assist the student in his examination, but all the leading features must be stated by which the examination is to be guided. In respect to the history of the patients, it is difficult not to exceed the limits which furnish the essential features of a case—beyond this limit the details of the cases become tedious reading. Here in this catalogue, as should be the case in every good catalogue, references are furnished for the post-mortem records and case-books of the Hospital, and also to the periodicals and transactions of various societies in which records of the cases have occasionally appeared.

In the catalogue of 1866, of which the present volume is a supplement, the specimens were numbered continuously in series (I. to XXII.). In this catalogue the notation has been changed to the simple continuous index numbers (with a system of double numbers in reference to the old serial numbers).



The system of continuous or consecutive numbers for museum specimens, especially for pathological material, is, we consider, a most unfortunate one in every respect. As the author of this catalogue says, the numbers "are liable to change on each rearrangement," and with this system of notation, rearrangement becomes necessary at frequent intervals in every growing museum. Otherwise the specimens become so confused that they are difficult to find on the shelves.

Some one owes the debt to museums and the makers of their catalogues, of framing a system of notation, which is perpetual—a notation which never runs out. As an illustration of such a system, let us take an example of the liver. It is quite an easy matter to make a list of all the changes and morbid conditions of this organ. To each of these attach a principal number. The individual specimens under each group are indicated by a coefficient number. Thus, abscess of liver, principal number 1385. Of the various abscess formations, let us commence with the pyæmic; the first specimen is numbered 1385, the second 1385<sup>5</sup>, the third 1385<sup>10</sup>, and so on. The tropical, or solitary abscesses receive the same principal number 1385, but their coefficient is made, to suit the requirements of the case, at  $\frac{100}{100}$ . Abscesses from obstruction of the duct have likewise the same principal number 1385, with the coefficient  $\frac{200}{200}$ . Should the number of specimens of pyæmic abscess in time exceed 100, a coefficient number can be employed thus 1385<sup>5</sup>  $\frac{10}{10}$  and so on. Practically this duplication of coefficient numbers need not occur, if, at the beginning, sufficient spacing of the principal numbers has been provided for all known possibilities; unless by the retention of every specimen the museum is allowed to become a mere storehouse of duplicates.

This system of notation does not show at a glance the actual number of specimens on the shelves, as is the case by the continuous or consecutive system. The gross number of specimens must be shown by the curator's manuscript catalogue or museum blotter. This defect is, however, but a small fault considering the great advantages which the system in other respects affords. The system is very useful in indicating at a glance in what special directions the museum is deficient and in what class of specimens it is strong—points at which every curator has need of increased facilities.

The general appearance of the volume is very creditable to the editor and the hospital authorities.

M. L.

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ART. XXXIV.—*A Rational Materialistic Definition of Insanity and Imbecility, with the Medical Jurisprudence of Legal Criminality, founded upon Physiological, Psychological, and Clinical Observations.* By HENRY HOWARD, M.R.C.S. Eng., for the last twenty-two years connected with Asylums for the Treatment of the Insane; an Ex-President of the Montreal Medico-Chirurgical Society, etc. 8vo. pp. 145. Montreal: Dawson Brothers, 1882.

THE title of this book is appalling. A "Definition of Insanity and Imbecility," etc., without the reverberant prefix "Rational Materialistic," might, we think, have answered. The theoretical portion of the volume is a strange admixture of pathologies, mediæval and modern. Sensation, according to our author, is due to the electric or vital fluid that is generated in the nerve cells of the skin, which nerve fluid is conducted by

means of the sensory nerves to the brain by molecular motion. The electric vital fluid becomes turbid or opaque, causing insanity. The germ theory is not forgotten. "It requires no very great stretch of our imagination," says Dr. Howard, "to conceive a germ in the fluid of the afferent nerves propelled by molecular motion to the organ of consciousness, and, while remaining in that organ, producing violent mania, said mania subsiding when the germ by the same process becomes removed from the organ of consciousness." Verily we have here the hint to an investigation worthy of the genius of a Koch or a Formad!

A large part of the book is taken up with a discussion of the case of Hayvern, a Canadian convict, who murdered another convict named Salter, and for whom was set up the defence of epileptic insanity. Dr. Howard testified for the defence, and made out a good case for the accused. He has evidently had a large experience with the insane; and we would accord to his clinical and medico-legal investigations in psychiatry a much higher place than we have to some of his theoretical notions about the pathology of insanity. Much of his advice to experts is admirable. He shows that Hayvern was hanged as Guiteau was hanged—to appease society. In the trials of both, the barbarous doctrine was held that a knowledge of right and wrong should be made the touchstone by which to test sanity or insanity. We venture the opinion that one State hospital will more than hold all the insane of Pennsylvania who cannot discern between right and wrong.

The great questions of crime and responsibility cannot too often be brought before the profession, when those presenting them give evidence of some practical familiarity with their subjects.

Dr. Howard's monograph is enlarged by the reproduction in full of an article by Prof. William Osler on *The Brains of Criminals*, and another by Dr. James G. Kiernan on the *Medico-Legal Relations of Epilepsy*, and also by remarks of Dr. Hack Tuke and others; but, as the ballast in this case is valuable, we do not think that the reader need make complaint.

C. K. M.

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ART. XXXV.—*The Student's Hand-Book of Forensic Medicine and Medical Police.* By H. AUBREY HUSBAND, M.B., C.M., F.R.C.S.E., M.R.C.S., Lecturer on Medical Jurisprudence and Public Health in the Extra-Academical School, Edinburgh; Member of the General Council of the University of Edinburgh, etc. etc. Fourth and revised edition. 12mo. pp. 604. Edinburgh: E. & S. Livingstone. London: Baillière, Tindall & Cox, 1883.

This volume constitutes one of a series of medical hand-books, which of late years have become so much the fashion, both abroad and in our own country. In the medical schools of Europe, where the number of subjects required of the student for examination, before attaining his degree, is larger than with us, the question of *condensation* becomes to him a matter of vast importance. Hence the growing demand for manuals, hand-books, *vade mecum*s, and other short-cuts to the desired end, containing the *multum in parvo*.

The fact that the present volume has reached the fourth edition speaks well for its merits. That so comprehensive a subject as medical jurisprudence, including also toxicology, should be discussed within so small a

compass, and well discussed too, so far as the limits will allow, is certainly no small praise for the author. We have looked through the different topics presented with some degree of attention, and find in each all the really practical important points treated in the tersest possible style. Certainly, there is no waste of words on the author's part. But the question is, can the student of forensic medicine thoroughly master this science by perusing such a work as the one before us? We think not. Whilst it may serve as an admirable *résumé* of facts to the veteran in this branch of knowledge, we think the beginner would be perplexed and discouraged in his investigations, from the want of proper elaboration of the subject. We notice, under the head of blood-stains, that no allusion is made to the possibility of distinguishing human blood-corpuscles from those of our common domestic animals, the ox, horse, sheep, and hog, as has been demonstrated by Prof. Richardson of our own city.

Other criticisms might be made in reference to omissions under various headings, but we incline to attribute these to the limited space allotted to the author. This, however, makes it only the worse for the student.

More than one-third of the work is devoted to the consideration of *medical police*, a subject pertaining to the domain of hygiene rather than to that of medical jurisprudence. This will be sufficiently apparent when we enumerate some of the topics discussed under this head: Mortality of the two sexes as influenced by locality, seasons, professions, marriage, prostitution, civilization, and intemperance; vital statistics; expectancy of life; ventilation; meteorology; climatology; temperature; winds; sewerage; water; food; clothing; epidemic diseases; and cemeteries. Whilst a proper knowledge of all the above subjects is confessedly important to the student of hygiene, we submit that they can hardly claim a place in a treatise on legal medicine.

J. J. R.

ART. XXXVI.—*A Guide to the Practical Examination of Urine.* By JAMES TYSON, M.D., Prof. of General Pathology and Morbid Anatomy, University of Pennsylvania, etc. etc. Fourth Edition. Revised and corrected. Philadelphia: P. Blakiston, Son & Co., 1883.

"If it be true that a good wine needs no bush," it is equally true that a volume of such universally recognized merit as this one needs no further commendation from a reviewer.

The improvement in the fourth edition consists in the elaboration of the articles upon albumen and sugar, and the addition of some concise paragraphs upon fibrin and globulin.

The article upon sugar has been much improved by a critical review of the accuracy of the tests in most common use, especially the copper and bismuth tests. The author remarks on the subject of the qualitative testing of urine, suspected to contain sugar, as follows:—

"When I say Trommer's test is a reliable test in my hands, I do not mean that it will detect the minimum of sugar recognizable in aqueous solutions. I mean that I can detect such quantities of sugar as are of clinical significance. With all tests there are certain very evident reactions, and certain doubtful ones, and to interpret these last, experience must often be relied upon."

E. T. B.

# QUARTERLY SUMMARY

## OF THE

### IMPROVEMENTS AND DISCOVERIES

#### IN THE

## MEDICAL SCIENCES.

### ANATOMY AND PHYSIOLOGY.

#### *The Nerve-centre of the Uterus.*

At the meeting of the Société de Biologie, held Dec. 23, 1882, M. PEMBO read a paper, in which he stated that the contractions of the uterus are regulated by automatic nervous ganglia situated in the anterior wall of the vagina, and independent of the cerebro-spinal axis; other auxiliary centres probably also exist in the uterine appendices. The presence of these centres is demonstrated by the appearance of uterine contractions when these situations are stimulated by the electric current. M. Pembo has also been able to demonstrate anatomically the existence of ganglion cells at these points.

M. PAUL BERT believed, on the following grounds, that the influence of the spinal centres in producing uterine contraction could not be excluded; for when the spinal cord is divided in the lower dorsal region in a female rat, and asphyxia then produced, the uterus can be felt to contract; but if the lower segments of the cord are destroyed and asphyxia then produced, no such contractions take place.—*Le Progrès Méd.*, Jan. 6, 1883.

#### *Saccharifying Power of the Saliva.*

M. A. BÉCHAMP, in an article contributed to the first number of Brown-Séguard's *Archives de Physiologie* for the present year, after commenting upon the circumstance, at one time considered remarkable, that whilst the saliva of man possesses the power of converting starch into sugar, no such power is exerted by the saliva of the horse, dog, or ox, undertakes to show—first, that human buccal saliva is not indebted for its diastatic power to any alteration effected by the air on the various immediate organic principles which are secreted by the glands and discharged into the buccal cavity; secondly, that the power of converting starch into sugar belongs to a peculiar and special zymase which is contained in the saliva, and that this zymase is the outcome of the action of the microzymes proper to the salivary glands, of the microzymes of the anatomical elements which line the buccal cavity and the tongue, and of the microzymes and infusory animalcules that accumulate in the interstices of the teeth. Lastly, that the parotidæan saliva of the horse and that of the dog do not saccharify boiled starch naturally, but

that they acquire this power when they are placed in contact with the buccal organisms of man. In the course of these experiments he found the buccal infusory animalecules to have an extraordinary power of converting starch into sugar, one-thousandth part of a gramme of the matter adherent to the free border of the gums of a healthy man, after being frequently washed with a weak solution of creasote, acting powerfully on starch paste. This material was formed of the debris of epithelial cells, of numerous molecular granules, and of many moving or stationary short or long bacteria (probably segments of *Leptothrix buccalis*), and no doubt some remains of food. The buccal organisms or granules are the bodies he endeavours to show are the really active bodies, for he has accomplished the removal of the other elements, and found the saliva of man still to retain its powers, and he supplies evidence to show that they are not identical with the bodies which develop in the saliva either of man or of the animals named after removal from the body and filtration.—*Lancet*, January 27, 1883.

#### *Gastric Digestion under Various Influences.*

Probably most, if not all, medical men are pretty strongly convinced of the injurious effects of a large draught of fluid taken along with meals, and act upon that conviction in laying down dietaries for their dyspeptic patients. At the same time we are not aware that any very accurate observations have been made on the point, and therefore a short account of the results obtained by Dr. FLEISCHER on this and kindred points (*Berl. Klin. Woch.*, 1882, No. 7) will not be void of interest. The first point in Dr. Fleischer's method was to ascertain for the healthy stomach the limits of the period of digestion for a given diet, that chosen being in almost all cases soup, bread, and beefsteak each day, alike in quantity and quality. At twelve o'clock this food was given, and six to seven hours later the stomach was washed out by means of a stomach-tube. The result showed that while for the same individual the digestion period was tolerably constant on successive days, for different individuals the period varied between five and a half and seven hours. The digestion period having been fixed, the same diet was given next day, but along with it half a litre to a litre and a half of water was drunk. At the same hour as on the previous day the stomach-tube was introduced. The result showed that there are healthy stomachs in which the drinking of cold water along with a meal, even to the amount of a litre and a half, produces no change whatever. In the great bulk of cases, however, it appeared that in a healthy stomach half a litre has no effect, a second half-litre causes a slight prolongation of the digestion period, while a third half-litre causes a distinct prolongation. A patient affected with moderate dilatation of the stomach and a slight catarrh completed the digestion of a given diet within seven hours when no water was taken. With half a litre of water the digestion was a long way from completion at the end of seven hours; while on the following day, when no water was taken, at the end of seven hours the washings of the stomach were almost quite clear. Having ascertained that digestion goes on equally rapidly whether the person lies quiet in bed or is up, Dr. Fleischer tried the effect of several hours' smart walking after meals. In some cases the digestion period was not prolonged by this, but in the great bulk of cases it was distinctly so; thus justifying the old rule, "After dinner sit awhile." In regard to the effect of heat on digestion, Dr. Fleischer made careful experiments, and in the great majority of sound stomachs he found that by the application of warm poultices over the stomach for five to six hours immediately after a meal, the digestion period could be shortened by about an hour. Cold seemed to have no effect whatever. As to the administration of pepsine and dilute hydrochloric acid to assist digestion, Dr. Fleischer finds that neither drug has any effect whatever in

healthy stomachs, or in the case of patients with dilatation of the stomach and moderate catarrh, where free acids had been found previously in the washings of the stomach. This result, Dr. Fleischer points out, is not contradictory to those of Professor Leube, who found that in his patients with chronic gastric catarrh, digestion was distinctly improved by the use of these drugs. In Professor Leube's cases the gastric juice was deficient, while in Dr. Fleischer's it was secreted copiously. Dr. Fleischer confirms Kretschy's results as to the retardation of digestion by menstruation, and the return to the normal on the cessation of the menses. The preceding results give certain indications for treatment. They justify us in forbidding the consumption of a large amount of fluid, more especially cold water, at meals; and they also show that after dinner a period of rest is advisable. Dr. Fleischer had previously watched the good effect of poultices in cases of ulcer of the stomach, and he believes that this arises not only from their soothing influence, but also because the process of digestion is hastened, and so the stomach has a longer period of rest. If the stomach washings contain free hydrochloric acid, it is useless to give more; but in all dyspeptic cases it is well to give pepsine, as we can never be sure that that substance is not deficient.—*Med. Times and Gaz.*, Nov. 25, 1882.

#### *The Physiology and Pathology of the Stomach.*

Dr. LUDWIG ERINGER (*Deutsch. Arch. für Klin. Med.*, Band xxix. Heft 5 and 6) has made a large number of experiments on himself and on many other persons, to decide at what time during the state of digestion free hydrochloric acid appears in the gastric juice. He found that the latter contained an excess of free hydrochloric acid during the third and fourth hours after an abundant and rich meal.

Examination of the gastric juice, in a case of typhoid fever, elicited the fact that the masses vomited during the period of the highest fever contained a large amount of free hydrochloric acid. As the results so far gained in this direction have been contradictory, this new addition to the chemistry of the digestion of persons suffering from high fever is rather important.

Examinations into the amyloid degeneration of the stomach showed, in eleven cases, that the vessels of the walls of the organ were also affected, more or less, by the same process of degeneration; frequently the muscular coat, especially the muscularis mucosæ, often a part of the areolar tissue of the mucous membrane and the glandular structure, participated in the same morbid alteration.

Dilatation of the stomach is brought by the author into causal connection with the coexisting considerable amyloid degeneration of the muscular walls of the organ. If the latter no longer possess the tonus which is necessary to enable them to carry the weight of the contents of the stomach, passive dilatation, its degree depending upon the amount of the contents, will temporarily ensue, and gradually change into permanent dilatation, as the peristaltic movement becomes less and less sufficient for the locomotion of the contents of the organ.

Concerning the development of ulceration in cases of amyloid degeneration, the fact was noted, that it is not the amyloid parts which are attacked by this ulceration, but those parts which are not suffering from amyloid degeneration, but which, not being provided sufficiently with blood from the degenerated vessels, fall a victim to the destroying influence of the gastric juice, which only an ample supply of alkaline blood can prevent. The physiological function of the stomach in cases of amyloid degeneration of the vessels of the mucous membrane of the organ undergoes this change, as proved by the frequently repeated examination of the contents of the organ in five such cases; that the gastric juice, at the proper time, exhibits a want of free hydrochloric acid.

Regarding the symptoms during life by which the physician, under certain circumstances, may be able to recognize this participation of the stomach in the amyloid degeneration, Dr. Frerichs first drew attention to the fact that in the beginning the appetite vanishes, and, from time to time, vomiting takes place, while the tongue is not coated. But Dr. Eringer contends that these symptoms are so little definite, and subject to such diverse explanations, that they can hardly be considered as possessing any diagnostic value. According to Dr. Eringer's experience, amyloid degeneration of the vessels of the stomach by itself does not exert any influence at all on the appetite. Vomiting, with clean tongue, absence of tenderness in the epigastric region, and amyloid degeneration in other organs, are the symptoms mainly to be relied upon. The favourable action of acids, and especially of hydrochloric acid, in cases of typhoid fever, seems to receive an explanation by the facts above mentioned; and the latter give the hint not to administer acids, for the purpose of assisting digestion; immediately after a meal, but about two hours after the same.—*London Med. Record*, Dec. 15, 1882.

#### *The Functions of the Pancreas in Fever.*

Dr. STOLNIKOW, of St. Petersburg, gives, in a communication to Virchow's *Archiv*, the results of his observations on the changes in the activity of the pancreas in fever. He refers, in the first place, to the well-known disturbances of the digestive organs that accompany and characterize febrile states of the system; to the thirst, dryness of tongue, nausea, loss of appetite, and abdominal pain; to the changes in the salivary secretion observed by Mosler, such as the deficiency in its quantity, its acid reaction, the absence of sulphocyanide of potassium and of the diastatic ferment, so that it is incapable of converting starch into sugar; and again to the changes observed by Manassein in the gastric juice, which, like the saliva, is diminished in quantity, and so altered in properties that it cannot exert its proper digestive power. But he says few or no attempts have been made to trace the changes occurring in the pancreas and its secretions, though there are good *a priori* grounds for believing that corresponding changes would occur. As the pancreas secretes a fluid containing powerful diastatic and fat disintegrating ferments, as well as a ferment acting on albumen, the inquiry has a special interest for Russian physicians, since many of the inhabitants of the more remote provinces are chiefly fed on starches and fats. In his experiments he first made a pancreatic fistula in accordance with the directions in Cyon's "*Methodik*," and after ascertaining the normal mode and kind of secretion, he injected perrillage into the dog on which the investigation was made. The result was that the quantity of the pancreatic secretion was at first augmented to a considerable extent, the rise being from 2-3 c.c. per hour to 70-79 c.c. per hour. This effect was brief, and was followed by diminution, and when the quantity had diminished the increase usually observed after the ingestion of food failed to occur. The cause of the increase in quantity he considers to be excitation of the secretory nerves of the gland by the septic poison; its subsequent arrest he attributes to the paralysis of the nerves, the septic poison in fact acting in the same manner that atropia does on the nerves of the salivary glands. In regard to the quantity of the special ferments contained in the pancreatic juice, they also would appear to be at first augmented and then diminished, the diminution being occasioned by the depressing influence exerted by the septic poison both upon the trophic nerves and upon the cells themselves, in which pathological processes are established. The influence of the fever in producing a persistent depressing effect is greatly in excess in its duration over its exciting effect, and hence he considers that the employment of pilocarpin in fever has a logical foundation.—*Lancet*, Jan. 6, 1883.

## MATERIA MEDICA AND THERAPEUTICS.

*The Anæsthetic and Diuretic Action of the Stigma of Corn.*

Dr. DUCASSE has been employing an extract of the stigma of corn (*Stigmæ de mûis*) in doses of from one to two grammes daily, in cases of chronic cystitis and gravel and nephritic colic with the most satisfactory result, as regards relief of pain and irritability of the urinary passages. He has also been able to confirm the following conclusions by Dr. Sandrieux of its diuretic properties. The latter found that when administered under any form, it causes in three or four days a marked increase in the quantity of urine, and that these effects were produced not only in diseases of the urinary organs, but also when the normal quantity of urine had been reduced from disturbance in the organs of circulation. It does not produce any disturbance of the nervous or digestive system, even when its administration in large doses has been long continued.—*L'Union Méd.*, Dec. 7, 1882.

*Physiological Action of Convallaria Maialis.*

Dr. ISAAC OTT draws the following conclusions from an experimental study with this drug:—

1. That convallaria increases the arterial tension greatly at the same time as the heart begins to beat more frequently; that the heart begins to fail before the tension.
2. The decrease of cardiac frequency is not due to cardio-inhibitory excitation, but to an action on the heart itself, probably on its muscular structure.
3. The rise of arterial tension is mainly due to stimulation of other vaso-motor apparatus than the main monarchical vaso-motor centre.
4. The drug causes clonic spasms.

If we compare the action of this drug with digitalis, it is found that the slowing of the heart by each is due to different causes: with digitalis it is due to a cardio-inhibitory excitation; with convallaria some other part of the heart is acted on. Digitalis, as a rule, does not primarily accelerate the heart; convallaria does. After section of the spinal cord digitalis is powerless to increase arterial tension, whilst convallaria is not. If now we compare the action of this drug with other cardiac agents, as aconite, nrechites suberecta, or astragalus mollissimus, it is found that it does not belong to this group. As aconite, nrechites, and astragalus resemble each other in their action, yet many important differences exist, so does convallaria differ from digitalis in several important particulars. The great rise of arterial tension would indicate its value in dropsies, reasoning upon Ludwig's theory of renal secretion. It is a drug which must not be pushed to any great extent.—*Archives of Medicine*, Feb. 1883.

*Chrysophanic and Pyrogallie Acids.*

At the meeting of the New York Dermatological Society, held Sept. 26, 1882, Dr. P. A. MORROW formulated the following propositions:—

1. That chrysophanic acid is perhaps the most efficient agent known to the profession for the external treatment of certain cases of psoriasis, especially chronic cases which have resisted other methods of treatment.
2. That its range of application is limited; in children, in patients with sensitive, irritable skins, and in acute cases generally, it is contra-indicated.
3. That in psoriasis affecting the face and hairy scalp, its intensely irritating action, producing puffiness of the face and eyelids, and its discolouring effect upon the hair render its employment impossible.



4. That it is prompt in its action—a week or ten days' active treatment being usually sufficient to develop its full therapeutic efficacy.

5. That the curative effect is only temporary; it does not afford a safeguard against relapses.

6. That it probably acts only locally and by virtue of its irritating properties, setting up a substitutive inflammation, which modifies or corrects the tendency to the inflammatory overgrowth of epidermic cells.

7. That its employment is attended with certain objectionable results, some of which always follow its use, while others seem to depend upon idiosyncrasy, physiological and morbid predispositions, etc.

8. That a brownish, prune-juice discolouration of the skin which persists long after the application is discontinued, a reddish staining of the hair and nails, and an indelible dyeing of the clothing are inseparable from its use.

9. That the erythematous and furuncular inflammations which occasionally follow its use may be classed as incidental effects, as they do not always depend upon an excessive strength of the preparation employed, but are frequently manifest after a mild application—intense dermatitis resulting in exfoliation of the epidermis in large flakes, has been observed after an application of 10 grs. to the  $\mathfrak{z}\mathfrak{j}$ .

10. That the strength of the ointment recommended by Balmano Squire ( $\mathfrak{z}\mathfrak{j}$ . to  $\mathfrak{z}\mathfrak{j}$ .) is excessive; a milder strength (20 grs. to  $\mathfrak{z}\mathfrak{j}$ . to  $\mathfrak{z}\mathfrak{j}$ .) being usually sufficient to develop the full therapeutical virtues of the drug.

11. That in other diseases for which it has been recommended, as acne, favus, chromophytosis, eczema marginatum, etc., chrysophanic acid possesses no advantages over certain other drugs which are commonly used.

12. That pyrogallie acid is a drug which is free from some of the more objectionable features of chrysophanic acid. It does not (in 10-per-cent. ointment) inflame the skin, it does not produce œdema of the face when applied to the scalp, and the discolouration is much less marked and permanent.

13. That it should nevertheless be used with caution, as pernicious results have followed its too free use. When freely used for two or three weeks, it produces an olive-green or tarry condition of the urine, with prostration, febrile disturbance, and other general symptoms.

14. That its curative action in psoriasis is much less rapid, but apparently more permanent than that of chrysophanic acid.

15. That its freedom from irritation, and its absence of odor, renders it an admirable substitute for chrysophanic acid and oil of Cade in diseases affecting the scalp and face.

16. That while its effect in psoriasis is slower and less brilliant than that of chrysophanic acid, its range of therapeutical action is much more extended. It causes to disappear the nodosities of lupus, the hyperplasias of syphilis, epidermic and papillary hypertrophies, and seems to have a good effect in promoting the cicatrization of wounds.

17. That it seems to act by virtue of its stimulant and irritating properties, it hardens and shrinks the tissues, shrivels up unhealthy granulations, and acts as a hæmostatic.—*Journ. of Cutaneous and Venereal Diseases*, Nov. 1882.

#### *The Absorption of Certain Salts from the Alimentary Canal.*

In a series of papers on the Action of Saline Cathartics, which are at present appearing in the *Journal of Anatomy and Physiology*, by MATTHEW HAY, M.D., was drawn attention to a remarkable peculiarity in the absorption of sulphate of soda from the alimentary canal. He there states (vol. xvi. p. 568), as

the result of a number of experiments—in which a purgative dose of the salt was administered to fasting cats, and the animals killed at various intervals afterwards, and the quantity of salt recoverable from the alimentary canal estimated—that, during the first hour after the administration of the purgative, the salt is rapidly absorbed, until nearly one-half of the whole dose (five grammes) disappears from the canal, whilst during the next hour the greater portion of the absorbed salt returns to the canal. The quantity of the salt was estimated from the quantity of sulphuric acid recoverable, which was precipitated in the usual way by means of barium sulphate from an acid solution of the ash of the dried contents of the canal. He has ventured to explain the peculiar course of the salt by suggesting that the rapid absorption occurs in the small intestine, and the excretion in the large intestine. A more detailed explanation will be found in the papers referred to.

Since these experiments were made, he has recently instituted others for the purpose of ascertaining if other purgative salts behave in a like manner to sulphate of soda, and if the base as well as the acid of each salt be similarly absorbed and excreted; for, as mentioned, it was only the acid of the sulphate of soda which he estimated. The other salts employed in the present experiments were the sulphate of magnesia and the phosphate of soda.

The results of the additional experiments with the sulphate of soda showed that, although the acid is rapidly absorbed during the first hour of the action of the salt, the base is not. For example, after the administration of five grammes of sulphate of soda to a cat, which was killed one hour afterwards, there were recovered from the contents of the alimentary canal, mixed with an infusion of the canal-wall, 2.544 grammes of sulphate of soda as reckoned from the sulphuric acid present, and 4.877 grammes of the salt as reckoned from the soda present. Other experiments performed in the same manner yielded like results. If the cat were killed two hours afterwards, nearly four grammes of the salt were recovered, as estimated from the acid, and about four grammes and three-quarters, as estimated from the base. After a longer period, the acid and base gradually became less.

The experiments with sulphate of magnesia yielded much the same results as those with the soda-salt. The acid rapidly disappeared from the canal during the first hour after the administration of the salt, and even to a greater extent than in the case of the sulphate of soda. As also with the latter salt, the acid returned to the canal, but not quite so rapidly as the acid of that salt. At the end of the second hour, there was hardly more of the acid in the canal than there was at the end of the first hour; but, by the completion of the third hour, the quantity had considerably increased. Meanwhile, the base or the magnesia was very gradually undergoing absorption, and never at any time during the first few hours after the administration of the purgative, was there evidence afforded of the base having pursued the same peculiar course of absorption and excretion as did the acid.

In his paper on the Action of Saline Cathartics, he pointed out that one-fourth part or less of a purgative dose of sulphate of magnesia will, when injected into the circulation of a dog or a cat, kill it; and he, at that time, remarked that, if this salt were absorbed into the blood in the same manner and to the same extent as the sulphate of soda, it was very strange that it did not exert its toxic action. He did not then know that the acid was absorbed, whilst the base, for the most part, remained in the canal, or was absorbed only very slowly. The present experiments, therefore, offer a very satisfactory explanation of the difficulty he formerly experienced. The salt is split up in the canal, and the basic or toxic part of it enters the blood very gradually, and not more rapidly than it can be excreted by the kidneys.

The remaining experiments were made with the phosphate of soda, to observe if the phosphoric acid of this salt might behave in the same way as the sulphuric acid of the sulphate. The experiments were only two in number, in one of which the cat was killed after one hour, and in the other at the end of two hours. In both the quantity of phosphoric acid recovered from the alimentary canal and its contents was large, and did not exhibit any evidence of the same primary rapid absorption as of the sulphuric acid. The phosphoric acid was, however, more reduced in quantity than the base, and it is probable that, to a certain extent, the phosphate undergoes decomposition in the canal.

How the splitting-up of the sulphates in the intestines is effected, and in what combination the acid passes into the blood, is beyond the scope of the present communication.—*Brit. Med. Journ.*, Dec. 16, 1882.

### Transfusion.

The question of the treatment of cases of excessive loss of blood by means of injections of alkaline solutions of common salt must be held to be well worthy of consideration. Schwarz wrote on the subject in 1881, recommending this method of treatment as a safe and rapid means of saving life, and a review of his book will be found in our pages for December 17, 1881; and he has since made a further contribution to the subject (*Berliner Klinische Wochenschrift*, 1882, No. 35); and in the *Deutsche Medizinisch-Zeitung*, No. 46, is an abstract of two cases by Kümmell. The advantages that a simple non-coagulable and easily prepared fluid possesses over even defibrinated blood cannot be too highly estimated: and if, as is maintained, the real want of patients suffering from acute anæmia is not so much blood-disks as blood-pressure, the employment of an ordinary salt solution presents an easily prepared agent ready to hand in all emergencies. It is obvious, however, that a trustworthy conclusion as to the value of the proposed remedy can only be arrived at by its practical employment. Schwarz recommends intravenous injection of the fluid as in ordinary blood-transfusion. In both Kümmell's cases the solution was thrown into the radial artery—i. e., the intra-arterial method of Bischoff. In the first example the transfusion was resorted to for hemorrhage after the operation of nephrectomy; a 6 per cent. solution of chloride of sodium made alkaline by a few drops of caustic soda was injected to the amount of about 160 grammes, at a temperature of about 40° C., and at a pressure of about one metre. The immediate effect was recovery from the collapsed condition, but the patient died the next day in consequence of disease of the other kidney. In the other case, in which the operation was performed on account of acute anæmia due to hemorrhage from a resected knee, about 500 grammes were introduced, the pressure not being measured. The heart was in a weak state. The general effect was all that could be desired, but a swelling in the hand was noted, which was no doubt due to rupture of capillaries by the force of the injection; this swelling diminished, but gangrene of the hand set in, which necessitated amputation of the forearm. In the part cut off, thrombosis of the ulnar artery was found. The immunification was attributed to the combined action of the high pressure at which the fluid was injected, and the cardiac debility, aided by the anatomical arrangement of the vessels in the hand. The author comes to the conclusion that it is better to open the median basilic vein than to use the intra-arterial method. There seems to be some ground for believing that intra-venous injections of solutions of common salt, properly performed, have been occasionally of real life-saving value; or, at least, that enough encouragement has been met with to justify a more extensive trial of this method of treatment.

In the same number of the *Deutsche Med. Zeitung* an abstract of some remarkable observations by Giulio Dozzi is given. Two cases are mentioned in which blood was transfused into the cavity of the peritoneum, one of which ended fatally in twenty-four hours, the other after ten days. Unfortunately, no other particulars are given. This operation has been done twenty-seven times in Italy, four times with fatal ending; and in two cases there was complete restoration to health. The apparent benefit from this proceeding was in most cases not lasting; and the operation had to be repeated at definite intervals, which, as the earlier cases seemed to give rise to no dangerous symptoms, it was thought could be safely done. But the good results in the first cases were not maintained. It would appear from what follows that the intra-peritoneal injection was used to overcome the anæmia of chronic affections, for, looking to the lessening success of this method of treatment, Dozzi asked himself whether the introduction of similar quantities of blood into the intestinal canal might not be productive of less brilliant but more useful results. Four cases were experimented on. The first was a boy aged thirteen years, brought very low by pellagra; a litre and a half of blood was injected eight times in a fortnight, with complete restoration of health. The second instance was of much the same kind, and eleven enemata of blood were given. The third was the case of a woman aged forty years, suffering from splenic leukæmia; here twenty-eight injections were given in two months; the patient greatly improved, and the spleen was reduced in size. The last was also a case of leukæmia, in which thirty introductions of blood were performed, with slow but sure improvement, the spleen lessening in size, and finally the blood returning to its normal state. The blood, injected by an enema apparatus, was taken from sheep or oxen whilst being slaughtered; it was defibrinated, and kept warm, if necessary, in a water-bath, the quantity used varying from one litre and a half to two litres. The patient gradually became able to retain this large quantity. We are warned that too much pressure must not be used, lest the blood should get into the higher parts of the alimentary tract, where it would be rather digested than absorbed. In this country we know practically nothing of the intra-peritoneal method of injection, but we should have thought that the procedure could scarcely be regarded as beneficial, or even as harmless. Enemata of blood may be nutrient, but they cannot be called transfusions in the ordinary sense of the term, and we confess to a doubt whether blood can be simply absorbed, even from the large bowel; further, this method of treatment was practised on cases widely different from those of acute anæmia. If such modes of administering the blood of animals be of therapeutical value, they probably are not so by such direct means as Dozzi seems to suppose. Moreover, because diseases get well whilst a certain treatment is in progress, the success need not depend on that treatment. Lastly, the facts given are not sufficient to prevent some doubt of the accuracy of the diagnosis of splenic leukæmia in the above instances.—*Med. Times and Gaz.*, Jan. 20, 1883.

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## MEDICINE.

### *Rare Complications of Enteric Fever.*

Abscess in the liver, occurring in the course of typhoid fever, has been recorded once by Hudson, and pyæmic deposits have been noticed once each by Louis and Frerichs. Murchison has seen a yellowish substance in the liver,

probably of the nature of an infarct. Von Sidlo has put on record a probable case of hepatic abscess. So far as we know, these are all the instances in which this affection has been observed as an epiphenomenon in the course of what the Germans call "abdominal typhus." A fresh example is afforded by the publication of a case (*Berliner Klin. Woch.*, No. 51) by Dr. Asch, late assistant at the Strasburg Clinic for Children. If the hepatic disease be uncommon in adults, it appears to be even more so in children. Von Sidlo's case affected a girl aged ten years. The present example occurred in a boy aged twelve years, who suffered from a fairly severe attack of enteric fever. The course of the affection was of the usual uninterrupted character until the twenty-first day, when vomiting occurred, and this symptom was repeated on the next few days. On the twenty-seventh day of the illness there was a sharp rigor with a high temperature ( $106^{\circ}$  Fahr.); this was followed two days later by severe pain in the right of the epigastrium; there was much tenderness just below the right costal margin, and here there was evidently a tumour whose characters it was not easy to diagnose owing to the hyperæsthesia. No fluctuation was felt; the spleen was not enlarged; there was no jaundice, nor any fulness of the epigastric veins. The rigor was not repeated. There was hectic fever with profuse sweats and faintings. Death happened on the thirty-fifth day of the disease. According to the reporter, the diagnosis lay between loculated purulent peritonitis and hepatic suppuration. The post-mortem examination revealed typhoid ulceration of the intestines which had healed; suppuration of the lymphatic glands in the neighbourhood of the ileo-cæcal region; and several (eight to ten) pyæmic abscesses in the right lobe of the liver, purulent infection having doubtless spread along the mesenteric veins into the hepatic ramifications of the portal system. Opponents of the doctrine of infection would probably interpret the suppuration as a spontaneous formation of pus due to general conditions, but we think the infective view much more likely to be the true one in this case.—*Med. Times and Gaz.*, Jan. 6, 1883.

#### *Orchitis in Typhoid Fever.*

Orchitis is one of the rarest complications of typhoid fever. So uncommon is it that its occurrence is not even mentioned in Murchison's classical account of the disease. Nevertheless a good many cases have been lately recorded. An instance (of doubtful nature) was described by Bouehut in 1867; and Dr. Duffey observed in the same year, at Malta, no less than eighteen examples of this complication of Maltese fever. Since then a number of cases have been observed in France, and at the beginning of last year its occurrence in the Mediterranean fever was described in our columns by Ellis. Another example has been lately published in *L'Union Médicale* by M. Sevestre, who has added some interesting comments on the complication. The patient had suffered from a severe attack of typhoid, of ordinary type, and was in full convalescence, free from fever, walking about the ward, when he suddenly experienced considerable pain about the groin, and it was found that the right side of the scrotum was reddened, and the testicle swollen and painful. The epididymis was not involved, but the spermatic cord was slightly painful. The left testicle was normal. There was no urethral discharge. The inflammation gradually subsided, and had disappeared at the end of six days. The affection usually comes on in the same sudden manner as in this patient. In most other cases the onset occurs during convalescence—three, six, ten, and even twenty days after the cessation of pyrexia. In no recorded cases had any complication accompanied or followed the fever to which the orchitis could be referred. The onset of the testicular inflammation is usually attended with a return of fever, and the temperature

may even rise to  $103^{\circ}$  or  $104^{\circ}$  F., the pulse to 120, and violent rigors may occur. In such a case, especially if the local pain is slight, the physician may think he has to do with a relapse of the typhoid, and in a case of unexplained pyrexia during convalescence from this disease the testicle should always be examined. In very rare cases the orchitis comes on before the primary fever is over. When the pain is slight it may only amount to a sense of uneasiness in the testicle, which is not always exaggerated by pressure. When severe it does not amount to a very intense degree, and is never neuralgic in character. The inflammation is always unilateral, and the epididymis is never involved. It appears to be more frequent on the right side than on the left (in seven out of nine observations). In the majority of cases (eight out of twelve) the affection is trifling; the inflammation does not go beyond the congestive stage, and it ends in from six to ten days. Occasionally even this degree is not attained, and transient hyperæmic swelling alone is noted. Sometimes its course is less benign; the local inflammation attains a considerable degree of intensity, and pus may be formed, and the suppuration may go on to complete destruction of the organ. Moreover, in the cases which run a mild course the affection may leave a persistent induration about the epididymis, and in one case atrophy of the testicle ensued. The pathology of this complication is still obscure. That it should recur especially in certain epidemics affords no explanation of its origin. Of the theories proposed, that it is a rheumatic inflammation, or one allied to the inflammations which follow scarlatina, or that it is due to a thrombosis in the spermatic vein, none appear satisfactory.—*Lancet*, Dec. 9, 1882.

#### *Acute Rheumatism.*

KARL VOHSEN (*Jahrb. f. Kind.*, xix. 1) in an interesting article discusses first the many theories as to the etiology of rheumatism, finds most of them untenable or unsupported by any definite facts, but leans rather to the belief that it is an *acute infectious disease*, due probably to micrococci in the blood. The many complications are discussed in relation to this point.

Childhood suffers from all the complications of acute rheumatism which befall adults. Paralysis of the muscles of the eye is the only one the author has not seen in children. But still rheumatism in children has its own characteristics. The severity and duration of the pain are less on the average than in adults, the duration in adults being two to three weeks, and in children five to eighteen days. The complications in children show still greater differences. Chorea, a frequent complication in early years, is exceedingly rare in adults. Heart affections are very much more frequent in children. From his own cases and the records of many others the author finds that the heart is affected in nearly fifty per cent. of cases in children. This complication is as apt to occur in mild cases as in severe ones; in fact, some authors think it more frequent in the sub-acute cases.

The author then analyzes twenty cases which had recently come under his notice. The ages were between nine and fourteen years. No deductions as to hereditary influence or sex could be fairly drawn. In nine cases there was endo- or pericarditis. In none of these was the fever at any time above  $103.2^{\circ}$  F., and in one case there was no fever.

Swelling of the joints was observed in three cases. The pain was severe but of short duration. In all cases the salicylate of soda proved promptly effective against the affection of the joints, but had no effect on the development of the cardiac complications. These occurred in about half of all the cases. The mitral valves and the pericardium were most frequently attacked. The lighter

forms of rheumatism seemed especially to predispose to the heart troubles, making examination of the heart necessary in all cases.

As to why the heart is affected in children more often than in adults the author can offer no explanation. Anatomy and physiology give us no theories. The noduli, Jacobî's narrowness of the aorta, and other anatomical points of difference between the child's and the adult's heart have disappeared before the age at which rheumatism is frequent. The author then argues that the best theory to explain it is that rheumatism is an acute infectious disease, and attacks the heart of the child more often on account of the less power of resistance it has. Further, exactly this relation of the heart to acute rheumatism is an argument in favour of its infectious origin. Of forty-five cases of endocarditis in childhood reported by v. Dusch, fifteen were idiopathic, twenty were connected with acute, two with subacute rheumatism, and the remainder were complications of outspoken infectious diseases—scarlatina, variola, syphilis congenita. The acute rheumatism, therefore, so far as the heart complication is concerned, would seem to class itself with these acute diseases. Further, the rheumatism especially causes heart complications because its affection especially attacks synovial membranes, and because there is so marked a parallelism between synovial membranes and the endocardium. All the darkness which surrounds the development and course of acute rheumatism is not removed by the supposition of a specific virus, but the author claims that not only has the theory good facts for its support, but also it explains more of the symptoms and complications than any other theory which has been offered.—*Amer. Journ. of Obstet.*, March, 1883.

#### *Diabetes Insipidus of Nervous Origin.*

An instance of the connection between diabetes insipidus and disturbance of the central nervous system, recently recorded by Flatten, is of much importance not only to the pathologist, but to the physiologist, as it confirms certain previous observations respecting the localization of the urinary centres or nervous tracts (*Archiv für Psychiatrie*, XIII. 3, S. 671). The case was of traumatic origin. A man, aged twenty-two, sustained a severe injury to the left side of the neck and the occipital region, with temporary loss of consciousness, variable diplopia, and impairment of hearing on the right side. Almost immediately after the accident, polydipsia and polyuria set in; and later on boils made their appearance. When seen by Flatten, the man was found to be suffering from complete paralysis of the left external rectus, and partial paralysis of the right external rectus. Hearing was lost at the external meatus of the left side, whilst sounds were conducted through the structures of the head. There was neither sugar nor albumen in the urine, which amounted to twelve litres (423 ounces) per diem. Iodide of potassium was exhibited internally, and mercurial ointment rubbed into the neck, whereupon the polyuria decidedly diminished. Flatten's diagnosis of the locality of the lesion was that it was situated close under the nucleus of the left sixth nerve, which it destroyed, whilst it extended across the middle line and affected the nucleus of the right sixth nerve; but confessedly this diagnosis did not account for the peculiar disturbance of hearing. It is a fact of the greatest possible interest that the present case is the third instance on record of the association of traumatic polyuria with paralysis of the sixth cranial nerve.—*Med. Times and Gaz.*, Feb. 10, 1883.

#### *Muscular Spasm at the Commencement of Voluntary Movements.*

Under the above title, a very interesting and critical study is made of a disease hitherto undescribed in France, and almost, if not quite, unrecognized in

this country, by MM. Gilbert and Marie (*Archives de Neurologie*, vol. v.; No. 13). The patient upon whom their observations were made was a native of Cairo, aged twenty-six; the essential feature of his disease being that whenever he put any group of muscles into action they became seized with tetanic rigidity, lasting two or three seconds, and passing off gradually, not to reappear whilst he kept on using the same set of muscles: thus, in going upstairs his legs became rigid at once; but after he had mounted a few steps the rigidity disappeared, and he was able to go up the rest like any ordinary person. His arms were affected in a similar manner, as also the muscles of his eyeballs, tongue, and larynx. The muscles of his face were not affected, and he had never had any trouble in deglutition, defecation or micturition. During the spasm the affected muscles were notably increased in resistance and stood out in relief. He was a well-nourished, muscular man. The muscles were not hypertrophied, but were unusually sensitive to pressure. Myoidema was obtained in the gastrocnemii, and to a less degree in the quadriceps. The tendon-reflexes were natural, and passive movements did not provoke rigidity. There was no lordosis. The chief fact brought out by the electrical examination was the readiness with which the contraction produced by the current became tetanic, and also the way in which spasm was developed in the muscles adjoining that acted upon. He seems to have been an intelligent man, though somewhat deficient in memory, and with a rather violent temper. There was nothing noteworthy in his family history. The muscular affection was believed to have commenced when he was about ten years old. Amongst the various cases of this disorder that the authors have succeeded in collating, the most interesting series is that published by Dr. Thomsen, who was himself the subject of the affection, and who had been enabled to trace it in his own family through three generations. The history of this family is so interesting that we need make no apology for giving it here. Dr. Thomsen's great-grandmother died of puerperal mania in her first confinement; her two sisters had some mental affection late in life; her son (the narrator's grandfather) also had some mental affection in old age, and he left four children, the two younger of whom had this muscular rigidity in a marked degree, and were also deficient in intellect. The two elder were healthy; one of these was the narrator's mother. Of her thirteen children, no less than seven were affected with this muscular rigidity. In the next generation it has shown itself in six out of thirty-six children (including Dr. Thomsen's own four, all of whom had it, one even showing it though it died in infancy). After such a history as this, the influence of heredity cannot be denied. In discussing the nature of this affection, the authors incline to the view that it is of muscular origin, notwithstanding the fact that two observers have failed to detect any morbid state of the muscular fibres. In conclusion, they point out the objections to one of the names that has been given to it, viz., "spasmodic hypertrophic spinal paralysis," inasmuch as there is no hypertrophy and no paralysis, and no evidence to support the idea that it is of spinal origin.—*Med. Times and Gaz.*, Feb. 24, 1883.

#### *Treatment of Epilepsy with Sodium Nitrite.*

At the meeting of the Royal Medical and Chirurgical Society, held on Nov. 28th, Dr. CHAS. H. RALFE claimed the credit of first introducing this drug for the treatment of epilepsy for Dr. Law, of Hastings, who was the first to administer it, and who had fully described the theoretical reasons which led him to employ it, together with an account of its physiological action, in the *Practitioner* for June of the current year. Sodium nitrite in its action resembled nitrite of amyl and nitro-glycerine. It had one advantage over these remedies for the treat-



ment of epilepsy; its effects were produced more slowly, and were more permanent in character. The dose should just fall short of producing full physiological effect. The author advised that care should be taken to ascertain the purity of the drug, as many samples contained an admixture of sodium nitrate. The details of seventeen cases treated by the author in the out-patient department of the London Hospital were given. Of these seventeen cases, three received no benefit, four improved slightly, one was a doubtful case, whilst nine were benefited decidedly. Of all the cases, eight, previously to treatment with sodium nitrite, had been treated with bromide of potassium. Of these, three had improved under its use, and went back when the medicine was changed to sodium nitrite. Of the other five, the bromide treatment was inefficacious from the first in three cases; and in two, though it had done good for some time, it was losing its effect, and the patients were suffering from "bromism." In four of these cases, decided improvement followed the change to sodium nitrite, and the other improved to a lesser degree under its use. Nine of the patients commenced treatment directly with sodium nitrite. Of these, the disease in four was of long standing, and probably the patients had already been subjected to a course of bromide of potassium at other hospitals. Of these, two improved under sodium nitrite, and two received decided benefit. The remaining five cases were all tolerably recent ones. Of these, three received decided benefit, one slightly improved, and one was a doubtful case. Among the cases that received decided benefit, the longest exemption from any kind of epileptiform seizure, was one who went eleven weeks without an attack—four weeks whilst under treatment, and seven weeks after leaving off the medicine. Another patient went eight weeks without an attack, and had no relapse at the time he was last seen; he was still an out-patient, and taking the medicine. Previously to commencing treatment, he had on an average three fits a fortnight, and they were increasing. Another remained free for a period of four weeks, and had no recurrence when he gave up his out-patient letter. Another, who had a fit on an average every week, after taking the medicine was free for five weeks. The same result obtained with another, who was free for one month. The author drew the following conclusions from these results. 1. Those cases in which bromide of potassium is of marked service are not generally suitable for a trial of sodium nitrite. 2. Those cases in which bromide of potassium does not agree well from the first, will probably be found to improve under sodium nitrite. 3. To patients who have taken bromide some time, and in whom the drug is apparently losing its effect, or who are suffering from bromism, sodium nitrite is useful as a change of medicine. 4. There are a class of cases, consisting chiefly of minor seizures or convulsive attacks, such as often occur in young persons usually at night, in which sodium nitrite is especially beneficial.—*Brit. Med. Journal*, Dec. 2, 1882.

#### *Nervous Derangement in Diabetes.*

The subject of diabetic coma, and its supposed connection with lipemia, fatty embolism, and acetonaemia, has been lately much discussed, while less attention has been given to many other signs of disturbance of the cerebro-spinal nervous system which are apt to occur in that disease. We do not intend in the present article to take up the subject of diabetic coma, further than to say that it is by no means proved, as some of the most recent writers on this subject seem inclined to assume, that the presence of acetone, or the superabundance of fat in the blood, is really the cause of that peculiar form of dyspnoic coma, which in a number of instances terminates the malady in such a striking manner; but the pathogeny of this peculiar condition will probably be found to be connected with the general

exsiccation of the tissues, and more especially of the nervous matter, which is found in diabetic subjects, and to which attention has been more particularly drawn by Ranke.

On the present occasion we intend to refer to some other forms of neurotic disturbance liable to crop up in the course of diabetes, and to which an able and laborious essay by Bernard and Féré in the *Archives de Neurologie* for November, has been devoted. These symptoms occur in the sphere of motion, general and special sensibility, and the intellect, while trophic disturbances are on the whole rare; and they have all one feature in common, viz., that they appear most unexpectedly. They seem, on the whole, to depend less on the diabetes itself than on the general nutritive changes in the system which are determined by the glycosuria. Analogous symptoms are not unfrequently observed in patients who are subject to uric acid diathesis, which is so closely allied to diabetes; moreover, they appear often when the quantity of sugar in the urine has diminished, and diabetic patients are occasionally found to succumb to cerebral symptoms just at the moment when they are no longer glycosuric.

In the sphere of motility, the earliest, most frequent, and diagnostically speaking, the most important symptom is a sensation of fatigue, lassitude and utter want of muscular energy. This does not depend on muscular emaciation, which is one of the later symptoms of the malady; but comes on, without apparent cause, either in the lower extremities or the loins, and may be severe enough to raise suspicion of spinal disease. There is difficulty in walking, the movements are slow, awkward, and without vigour; and the degree of the trouble varies a good deal, according to treatment, diet, etc. This lack of power may occur quite suddenly after a slight injury, and it has been attributed to defective nutrition of the muscles by the saccharine blood.

Various forms of paralysis are also observed, which are either localized, partial, and incomplete, or there is regular hemiplegia. At first, there may be an attack of apoplexy, with consecutive hemiplegia, which may get well; and there may be a repetition of these symptoms later on. In other cases, the apoplexy proves fatal, or there is simple loss of consciousness without subsequent paralysis, or a bad attack of vertigo. Again, paralysis may come on without being preceded by apoplexy; and hemiplegia of one side may be combined with monoplegia of the other. Monoplegia is, indeed, so frequent in the course of diabetes, that it is always advisable to examine the urine for sugar in such cases. Palsies of this kind may be confined to a limb, or part of a limb; to a single muscle, or a small group of muscles in the face; and they affect frequently the tongue and the muscles moving the eyeball. They may be quite transitory, indeed, last for a few hours only, and are often incomplete.

Difficulty in speaking may be either of the aphasic or the anarthric kind, or be simply owing to general debility combined with dryness of the tongue. Sometimes, there is a more or less complete loss of the memory for words. A temporary kind of aphonia is probably owing to transitory paralysis of the muscles of the larynx. There are not as yet any very conclusive observations on palsies of the muscles of the eye, although Kiwatskowski has recorded a case of paralysis of the fourth nerve in a diabetic patient, and the rectus externus has been found paralyzed under similar conditions.

Another interesting symptom in the motor sphere is loss of the muscular sense, and a consequent tottering gait, especially in the dark. This may be combined with "pins and needles" in the lower extremities, and therefore simulate tabes spinalis or locomotor ataxy. Indeed, one cannot help being struck by the close similarity of many of these symptoms to those of tabes.

Cramps and convulsions are far from common. The former appear generally

at an early period of the malady, together with the muscular lassitude. Cramps occur mostly in the lower extremities, and at night, and thus lead to insomnia, in the same way as polydipsia, nocturnal urination, sensations of pricking, tingling, and cold. Sometimes, however, insomnia appears without any of these apparent causes, and should lead us to test the urine for sugar; it is then, indeed, the first sign of disturbed cerebral circulation, and may be the precursor of more serious troubles. Convulsions may be observed, either by themselves, or associated with diabetic coma, or with different kinds of palsies. In the latter case, they are most probably owing to cortical lesions, more especially because they sometimes show the characters of partial monoplegic epilepsy, and alternate with temporary paralysis seated in the same area of the brain. The vertigo which is sometimes observed is probably allied to these epileptiform phenomena.

An important feature of the pathogeny of these cases is, that such palsies may be developed some time before the diabetes appears, as seen by Dr. Pavy, or just when the sugar disappears from the urine, or after it has been completely absent from it for several months consecutively. All the symptoms hitherto mentioned are subject to frequent remissions, which has led some observers to consider them due to congestion; but they may also be explained by limited destruction of certain parts, which are afterwards supplemented by other similar parts. Dr. Dickinson has described lesions in the nervous system of diabetic patients which he looks upon as primary, and as explanatory of all localized morbid phenomena, viz., milary excavations along the bloodvessels, containing extravasated blood, or crystals of hæmaturine, and areas of milary sclerosis in the brain, as well as in the cord. Subsequent observers have, however, not been able to corroborate these observations, and it seems exceedingly doubtful whether such lesions are really primarily developed.

With regard to sensibility, it is found that complete anæsthesia is rare; local areas of insensibility are, however, sometimes noted, so that hairs may be pulled out without causing any pain to the patient. More frequently there are complaints of tingling, tightness, cold, heat, and numbness, especially in one or both lower extremities, or in the sexual organs. Like the tabetic patient, the diabetic is exceedingly sensitive to external cold. Tactile sensibility may vanish, so that the patient is unable to hold a pin between his fingers without looking at it. Some patients lose the proper sensation of the ground on which they are walking. Pain in the joints, the loins, the haunches, and the back is common, and it seems particularly to invade the neck, where it is felt as a burn or the bite of a dog, and is combined with stiffness of the muscles. This rigidity extends occasionally from the back of the head down to the sacrum. There may also be headache, pressure on the top of the head, and various forms of neuralgia, more especially symmetrical and obstinate sciatica. Lightning-pains, similar to those of ataxy, have likewise been observed, and may, if combined with difficulty in standing, plantar anæsthesia, and areas of hyperæsthesia, lead a hasty observer to the diagnosis of tabes.

Sexual desire is generally in abeyance. In men there is frigidity and impotency, in women actual repugnance to connection. Certain neuroses, such as asthma, angina pectoris, and exophthalmic goitre, may be combined with glycosuria. Deafness is more frequent in the diabetic than in other persons, and seems sometimes purely nervous, while in other cases it is owing to lesions of the middle ear. Anorexia and perversion of the sense of smell have also been observed.

It is, however, the ocular affections occurring in diabetes which are of the greatest importance for diagnosis and prognosis. A more exact knowledge of the lesions found in the retina of the diabetic will, probably, in time, lead us to a better comprehension of the cerebral symptoms occurring in the same disease.

Diabetic amblyopia may be slight or grave, and may be the first symptom of diabetes. All objects appear to the patient in a kind of yellowish haze, and this is worse after meals. In general, both eyes are unequally affected. In most cases this appears due to paresis of accommodation, and the ophthalmoscopic examination of the fundus of the eye shows this to be normal, or, at most, the presence of a slight congestion of the optic disc. Glycosuric retinitis occurs in severe cases, chiefly towards the end, and does not appear to differ materially either in objective or subjective symptoms from albuminuric retinitis. Further researches on the finer changes of the retina in diabetes are most desirable.

The intellect is generally below par, the memory impaired; there is much despondency and apathy, interrupted by terrifying dreams, hallucinations and delusions, which may lead to suicide. At other times the patient is simply passive, hates to be disturbed, and cares for nothing but to be left alone. This intellectual decay often coincides with gradually progressive physical debility; but general paralysis of the insane and other similar affections, which have been occasionally observed towards the end, seem to be mere coincidences.

Trophic disturbances, such as are common in certain diseases of the spinal cord, may occasionally be observed in diabetic patients, such as perforating ulcer, with formation of eschars and copious hemorrhage, localized sweating, atrophy of the skin and adjacent tissues, and muscular atrophy.—*Brit. Med. Journ.*, Dec. 9, 1882.

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*The Communication of Tubercle by Inoculation and the Pathological Nature of the Lesions resulting therefrom.*

Prof. BURDON SANDERSON has been making a long series of investigations, from which he draws the following conclusions:—

1. The characteristic product of tuberculosis is not an aggregation of shrivelled particles of irregular form, but a tissue composed of lymph corpuscles held together by a network of hyaline connective substance.

2. There is a close structural analogy between this tissue and that of certain follicular organs belonging to the lymphatic system, *e. g.*, the follicles of Peyer, the ampullæ of the lymphatic glands, etc.

3. All the favourite seats of tubercle are naturally characterized by the presence of this tissue, which, from the analogy stated above, may properly be called *adenoid*.

4. The natural distribution of adenoid tissue in the body is an intimate relation with the lymphatic system. In the great serous membranes (which v. Recklinghausen's discoveries have taught us to regard as walls of lymphatic reservoirs) it forms sheaths round the bloodvessels, or masses of microscopical dimensions and irregular contour underneath the epithelium. In the solid viscera it is distributed here and there in the course of the lymphatic channels.

5. In the peritoneum, tuberculosis primarily consists in the enlargement or overgrowth of these sheaths or microscopical masses of adenoid tissue, and consequently the tuberculous nodules which are formed have the same intimate structure, and stand in the same anatomical relation to the vessels and epithelium. In the viscera the essential lesions also consist, not in new growth, but in overgrowth of pre-existing masses of adenoid tissue.

6. The primary local lesion in artificial tuberculosis, whether the cause be simple wound or specific inoculation, consists in the development at the seat of injury of granulations or nodules which have similar structural characters with those of adenoid tissue elsewhere, but cannot as yet be shown to be in relation with the absorbent vessels.

7. The first step in the dissemination of tubercle consists in its being absorbed

primarily by the lymphatics (which convey it to the lymphatic glands of which they are tributaries), and secondarily by the veins. Having thus entered the systemic circulation, it is distributed universally by the arteries. The serous membranes seem, however, by preference to appropriate it, and from them it extends by contiguity to the superficial parts of the organs which they cover.

8. The final stage of the process consists in the tertiary infection of the glands of each diseased organ, which glands consequently undergo enlargement and induration, and eventually become partially caseous. The enlargement is due to the multiplication of cells in all the tissues of the organ, but more particularly in the alveoli—the hardening to a process of fibrous degeneration—while the caseation consists in slow necrosis of the previously hardened and anæmic parts. From the first the gland is incapable of performing its functions, but it is not until induration commences that the absorbents of the organ to which it belongs are completely obstructed.

9. In the liver of the guinea-pig, and in some other organs, tuberculous tissue undergoes a fibroid degeneration and caseation, the results of which cannot be distinguished from those observed in the normal adenoid tissue of the lymphatic glands and of the spleen.

10. As regards the question of a *specific contagium* of tubercle, we think it very important to note that this is not yet disproved by the facts of traumatic tuberculosis. It still remains open to inquiry whether or not injuries which are of such a nature that air is completely excluded from contact with the injured part are capable of originating a tuberculous process.—*Practitioner*, Dec. 1882.

#### *Paracentesis and Incision of the Pericardium.*

Dr. A. PARTZEVSKY (*Mediz. Obozr.*, March, 1882) brought before the Moscow Physico-Medical Society a very interesting case of pericardial effusion, treated by repeatedly performed tapping, and finally by incision of the pericardial sac with subsequent drainage. The author at some length discusses the subject of operative treatment of pericardial effusions, and sums up his own views thus: 1. In a vast majority of cases the operation (that is, puncture and aspiration, and, if they fail, subsequent incision with drainage) is not attended with any danger. 2. It brings rapid relief, and its palliative usefulness is not denied even by the opponents of operative interference in similar cases. 3. In the absence of such complications as tuberculosis, cancer, organic changes of the heart, etc., the operative treatment of non-purulent pericardial effusions may prove successful in the majority of cases. 4. In cases of purulent pericarditis, it is perfectly justifiable to try an early operation, in order to prevent dilatation and fatty degeneration of the heart, which generally supervene here very rapidly.—*London Medical Record*, Feb. 15, 1883.

#### *Intestinal Polypi.*

At the meeting of the Pathological Society of London, held December 19, 1882, Mr. BOWLBY brought forward three cases illustrating the varieties of intestinal polypi: 1. In a man, aged sixty-four, who had had no intestinal symptoms, there were found diffuse polypoid growths throughout the colon, commencing just above the ileo-cæcal valve, and extending down to the sigmoid flexure. They were found in the mucous and sub-mucous tissues, and some were pedunculated. It was noteworthy that there was no stricture of the intestine. 2. A polypus removed from the rectum of a girl aged twenty-four, who had had no intestinal symptoms beyond slight constipation. The polypus was attached to the anterior wall of the rectum, about four inches from the anus; it was soft and suc-

culent, and covered everywhere by mucous membrane. It was accidentally ruptured during removal, and some turbid fluid escaped. After removal it weighed two pounds all but an ounce. Its chief interest lay in its size. 3. A polypus of the small intestine occurring in a female child, aged five. He gave the following history of the case: She was seized with pain in the abdomen suddenly one day; next day she passed some blood by the bowels, and during the next few days slime. She was admitted into St. Bartholomew's Hospital, ten days after the commencement of her illness, with a mass protruding from the anus, which eventually came away, and a portion of which was recognized to be the vermiform appendix. After this the child went on well, and left the hospital apparently recovered. Some months later she was brought back with symptoms of congenital syphilis, was readmitted, and died not long afterwards. At the autopsy the cause of death was recognized to be recent peritonitis. On opening the intestine, a polypus of fibrous tissue was found about eight inches from the anus, but evidently in the small intestine, and three inches and a half below this there was a transverse scar completely encircling the gut, where the small intestine, at what might have been the ileo-cæcal valve, had become adherent to the rectum or sigmoid flexure, so that the whole of the colon and cæcum had disappeared by sloughing. There was very slight constriction at the site of the scar. Mr. Bowlby remarked that when a polypus set up intussusception it was usually the part to first present at the anus and be expelled. In this case it must be assumed that the polypus had set up increased peristaltic action of the intestines below it, and had never been actually involved in the invagination itself.—*Med. Times and Gaz.*, Dec. 30, 1882.

#### *Peri-Splenic Abscesses.*

In an article on purulent peri-splenic collections, C. ZUBER reports (*Rev. de Médecine*, Nov. 1882) two interesting cases in which such purulent collections were found after death, the true character of which had not been suspected during life. In one of the cases the post-mortem revelation was a complete surprise, because no symptoms had been observed calling attention to the left side; and in the other there was an error of diagnosis, as the case had been considered as one of intro-abdominal malignant disease. The notes of these cases are given at length; both had a history of repeated malarial attacks. Following these is a brief consideration of other cases contained in medical literature of this very rare form of disease. The more important points of this essay may be summed up as follows: (1) In the upper portion of the abdomen are found purulent collections, which are called peri-splenic abscesses, although they only touch the spleen at one part of its surface, and are not at all localized in the sub-serous connective tissue of the spleen. They occupy by preference the irregular space bounded by the stomach, the spleen, the colon, and the diaphragm. These collections are the last stage of circumscribed peritonitis, due ordinarily to lesions of the spleen or the digestive tube. The infectious form of splenitis (comprising herein the lesions of malaria), and the round ulcer of the stomach, appear to play the principal rôle in these intra-abdominal abscesses. (2) The purulent collections of digestive origin contain gas, and their character is shown, with remarkable uniformity, by a resemblance more or less complete with pyo-pneumothorax, the more so because they are only separated from the pleura by the diaphragm, which is strongly pushed upward. The nature of these cases of false pyo-pneumothorax will be recognized at first by the existence of grave digestive disorders, and subsequently by the variability, the exaggeration or insufficiency, of the symptoms observed. The collections of splenic origin are scarcely ever

characterized by tumefaction and pain of the hepatic region and the general signs of latent suppuration; rarely, by tumours more or less marked or fluctuating. The diagnosis will scarcely be made except by exclusion. (3) Whatever may be the origin, the depth, or the extent of these peri-splenic collections, they are not above the resources of modern surgery. It is this practical point of view which will dominate the question. No effort should be spared in order to determine the existence, and then the nature, of the abscess; and exploratory punctures, either deep or multiple, should not be too much feared. Made methodically and prudently, such explorations bring only an insignificant danger, as the recent literature of hepatic abscess abundantly shows; they alone may be, on the contrary, the point of departure of a truly rational and useful therapeutic method.—*Practitioner*, February, 1883.

## SURGERY.

### *Neurectomy of Inferior Dental.*

Dr. SONNENBERG, of Berlin, has instituted a new operation for the excision of a portion of the inferior dental nerve, which he describes in the *Berliner Klinische Wochenschrift* for October 16th. It will be remembered that the nerve in question enters its bony canal on the inner surface of the ramus of the lower jaw, under cover of the internal lateral ligament. Dr. Sonnenberg found in the dead subject that, having the head held strongly backwards, it was possible to reach the inferior dental nerve by a neat incision, which was begun one centimetre and a half in front of the angle of the jaw, and continued along the (in this position) ascending border of the body of the lower jaw for three to four centimetres, as far as the facial artery—an incision which corresponds roughly to the insertion of the masseter muscle. We may say that two centimetres and a half is an inch, as nearly as may be. This being done, the inner surface of the lower jaw-bone must next be cleaned up to the internal lateral ligament, which usually lies about two centimetres and a half from the angle of the jaw; the insertion of the internal pterygoideus must be separated from the bone; the ligament and nerve may now be felt, and with good light the latter can be seen in the bottom of the crateriform wound. Next a strong blunt-pointed hook must be conducted by the finger up to the ligament, and then somewhat upwards along the ascending ramus of the jaw, and at the same time inwards in the direction of the buccal mucous membrane. In this fashion the nerve is hooked up without touching the neighbouring artery, which lies very close to the bone. The lingual nerve is quite to the inner side, and is not meddled with. The inferior dental so secured is very extensible, and can be drawn down towards the angle of the jaw, and a portion easily cut therefrom. The other methods (done either from the mouth, or by trepanning the lower jaw from the outside) are nothing like so good as this new operation, according to the author.

The advantages are enumerated: (1) The wound is the smallest possible; (2) the operation is done comfortably, provided the formal retraction of the head is thoroughly observed; (3) the bleeding is insignificant; (4) the capsule of the submaxillary gland is left intact, and so no burrowing of pus can take place there; (5) the nerve is easily found and brought forward alone; (6) a good piece can be excised, because the nerve can be drawn out so easily; (7) the wound is favourably situated for healing; (8) the scar is small, and in an unobjectionable place.

Dr. Sonnenberg has operated on the living subject three times for neuralgia, with eminent success both as regards operation and relief from pain. Von Langenbeck has used this method of operating once; but the nerve was only strongly stretched, not excised. The relief from neuralgia seems to have been equally great.—*Med. Times and Gazette*, Dec. 9, 1882.

#### *Complete Luxation of the entire Arytenoid Cartilage.*

CHVOSTEK reports a case of typhus in which the fever took on a pyæmic character. The patient was awakened suddenly in the night by extreme dyspnoea, and soon became unconscious. The respirations were very deep, and occurred every ten or fifteen seconds, and inspiration was accompanied by a harsh laryngeal sound, while the larynx descended low in the neck, and there was great depression of the epigastrium, intercostal spaces, and supra-clavicular fossæ at each inspiration. Expiration was nearly normal and noiseless, swallowing was impossible, the pharynx insensible, and reflex absent. Tracheotomy was at once performed, but failed to save the patient.

At the autopsy, the entire left arytenoid cartilage was found lying nearly loose in the rhina glottidis, only being bound by a slender thread of tissue to its former seat. The posterior half of the true and false vocal cords on the left side were also implicated by ulceration in the displacement. There was œdema of the right ary-epiglottic fold.—*Centrlb. f. d. Med. Wissen.*, Dec. 30, 1882.

#### *Sarcoma of the Tonsil Cured by Iodoform Injections.*

At a recent meeting of the Imperial Society of Physicians, in Vienna, Prof. WEINLECHNER presented a patient who had been cured of a sarcoma of the tonsil, with contemporaneous glandular enlargement in the neck, by iodoform injections at the hands of Dr. Schum. There were present Professors Billroth and Albert, both of whom had seen the patient and declined to operate upon him. The history of the patient was as follows: He first noticed his disease in March, 1881, and consulted Billroth, who pronounced the case hopeless and unfit for operation. He then went to Albert, who at first agreed to operate, but after a more careful examination refused. In June he went to Weinlechner, who found in the region of the left tonsil a tumour about the size of a lemon, much fissured and ulcerated, and a glandular swelling as large as an orange, deep in the neck, below the angle of the left jaw. Weinlechner agreed to operate, stating that it would be necessary to resect the jaw also, that even then he could not guarantee a radical extirpation, and that a speedy recurrence was not improbable. This outlook deterred the patient from submitting to an operation. Weinlechner then advised him to submit to iodoform injections (1 part to 10 of ether) by Dr. Schum.

Sixteen injections were made in the inner tumour and fourteen in the neck, each consisting of  $2\frac{1}{2}$  to 3 drops. In the beginning of August, after the sixth injection in each place, the glandular swelling was almost gone, and the tonsillar tumour decidedly smaller. In anticipation of a favourable and therefore interesting issue, the tumour was examined by Prof. Chiari, and pronounced a spindle-celled sarcoma. Now, however, occurred an unpleasant interruption. In the beginning of December the remains of the tumour in the fauces emitted an offensive odour, and in the night of December 14th four hemorrhages took place. As the hemorrhages amounted to about half a litre (a pint), Weinlechner, aided by Schum, ligatured the left common carotid artery. Silk was used for the ligature, and the ends were cut off short. A fistulous track remained, from which two months later a hemorrhage occurred, which was checked with tampons of styptic



cotton. The fistula remained open, in all, six months. During this time the patient had severe gastric catarrh—perhaps caused by absorption of iodoform—and a bronchial catarrh, and presented so melancholy a spectacle that metastasis was suspected. The use of iodoform was now discontinued, and the patient's appetite increased and his appearance improved. Under the diligent use of gargles of permanganate and chlorate of potash, the tumour in the fauces steadily diminished, and in its place there could be felt a comb-like elevation on the left wall of the fauces, extending downwards to the space between the pharynx and the tongue. This ridge-like elevation had disappeared in August, 1882, and now nothing can be felt of the tonsillar or glandular tumour, and only a delicate scar in the tonsillar region and on the palato-glossal arch indicates the former position of the new formation.—*Allgem. Wiener Med. Zeitung*, Oct. 24, 1882, p. 466.

This is a most remarkable case, and hard to be believed. Yet that the tumour was actually a sarcoma can hardly be doubted in view of the opinion of so many distinguished surgeons, and the examination by Prof. Chiari. But, admitting this much, the query arises, how much good was done by the iodoform beyond causing a large slough? and what part of the cure ought to be attributed to the ligature of the carotid artery?

#### *Successful Resection of the Pylorus for Gastric Ulcer.*

Dr. L. TH. VAN KLEEF, of Maastricht, has recently performed, with entirely successful results, the first case of resection of the pylorus done in Holland. The case was one of an unmarried woman, 37 years of age, who had for fifteen years suffered from a disease of the stomach, which for the last five years had been recognized as a gastric ulcer. The operation of resection was performed under strict antiseptic precautions. The abdomen was opened by an oblique incision, starting about three centimetres to the right of the linea alba, and three fingers' breadth above the navel, and extending to about six centimetres to the left of the linea alba. The greater and lesser omenta were ligated and divided, and the pylorus and duodenum drawn out of the wound, and the peritoneal cavity protected from entrance of foreign matter by a compress of antiseptic gauze. Rydygier's compresses were applied to the stomach and duodenum. The stomach was divided with the scissors between the clamps and the pylorus, and its mucous membrane divided so near the pyloric contraction that the opening into the cavity of the stomach was so small that only one finger could be inserted; this opening was subsequently sufficiently enlarged to make it fit the opening into the duodenum. The stomach and duodenum were united by five deep and five superficial Lembert's stitches, while the posterior edges were united by Wölfler's sutures, and the anterior by means of Czerny's sutures. The abdominal wound was closed and covered with a Lister's dressing. The excised portion measured four and a half by five centimetres, and was so contracted that a quill could be barely passed. On one side was situated an ulcer one centimetre in diameter and one millimetre in depth; no trace of carcinoma could be detected. The patient received a number of subcutaneous injections of ether, and for the first two days enemata of wine and milk and swallowed pieces of ice; there was no fever observed at any time, or any trace of peritonitis; on the third day she swallowed small quantities of fluid food; in six days the abdominal wound was completely healed, and in ten days she ate a beef-steak. In four months after the operation she had gained twenty-four pounds in weight.—*Deutsch. Med. Woch.*, Dec. 23, 1882

*Volvulus of the Ileum treated by Abdominal Section.*

At the meeting of the Medical Society of London, Dr. J. K. FOWLER read the notes of a case of intestinal obstruction in which abdominal section was performed by Mr. Hulke, and volvulus of the ileum found and untwisted. The patient was much relieved by the operation, and the bowels were opened freely three times subsequently. Death took place three days afterwards from cardiac failure and hypostatic pneumonia. At the post-mortem examination a portion of the ileum with a long mesentery was found somewhat congested, the peritoneum generally was normal and the wound healthy.

Special stress was laid upon the advisability of operating early in cases of internal strangulation of the small intestine, and attention was directed to the following mode of proceeding, at the author's suggestion, after the abdomen had been opened. The finger was passed deeply down into the pelvis, where a portion of collapsed small intestine was found; this was withdrawn and carefully followed until the obstruction was reached. It was laid down as an absolute rule that in the operation of laparotomy the distended bowel should only be manipulated in case the surgeon after a careful search had failed to find the collapsed intestine.

The following advantages were claimed for this method of operation: (1) That the collapsed bowel can be examined with far greater ease and in much less time than an equal length of distended intestine; (2) that a considerable length may, if necessary, be exposed at one time, without any difficulty arising, when it is desired to return it into the abdomen; (3) that the collapsed intestine never leads to the duodenum—a matter of some importance; (4) that the danger from peritonitis from exposure of contracted bowel is very slight; and (5) that rupture during its manipulation is practically impossible.

It was suggested for the following reasons that in all cases of obstruction of the small intestine the contracted portion would be found, as in this case, lying in the pelvis: (1) The tympanic abdomen shows that distended bowel is on the surface, as would be expected from its diminished specific weight; (2) that in making autopsies the author had noticed that if the upper portion of the small intestine be distended, the contracted lower end is always seen lying behind the distended portion, low down in the pelvis. The explanation offered was that during the violent and continued peristalsis, and gradual distension of the bowel above the obstruction, the smaller and less active portion of bowel below is forced into the pelvis, which is, besides, too small to hold a distended loop. Two cases were mentioned which had lately been operated on at the Middlesex Hospital, in which at the autopsy a second band had been found close to one divided during the operation; the result had not in either case been influenced by these bands having escaped notice.—*Lancet*, Feb. 3, 1883.

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*Extirpation of a Displaced Kidney.*

On Nov. 3d last Dr. WILLIAM M. POLK extirpated the kidney of an unmarried woman, aged 19, who sought relief from severe pain and distress in the left iliac fossa. Examination showed the absence of the vagina, and neither uterus nor ovaries were to be found in the true pelvis. In the left iliac region, deep in the fossa, was a tumour, freely movable in all directions. It could be pushed as low as Poupart's ligament, as far outward as the anterior superior spine of the ilium, far enough inward to bring its inner border to the centre of the pelvic inlet, and far enough upward to bring its upper border a finger's breadth above the posterior border of the crest of the ilium. It was of oval form, its greatest

length being from above downward and inward, its lower extremity apparently smaller than the upper. Running from this lower extremity downward into the pelvis, apparently toward the posterior surface of the bladder, was a thin cord-like strip of tissue. This tumour coincided with the region of pain.

Carefully weighing all the reasons for and against, it seemed plain that he had to deal with a displaced kidney, but one that was intimately associated with menstruation—so intimately as to make it probable that there was a close relation between the organ and the ovary. The fact that all the menstrual symptoms pointed to the left iliac region and none to the right, that no enlargement or tenderness during menstruation could be detected in the right iliac region, suggested the idea that all the organs appertaining to that function present in the case were in the left side. The line of thickened tissue that seemed to extend from the inner edge of the tumour down into the pelvis between the rectum and bladder, together with the extreme nature of the symptoms, gave weight to this view. This point being decided, the next question was as to the measure of relief proper in the case.

It was evident that it was not a dislocated kidney, but one congenitally displaced, for it could not be pushed from the iliac fossa. No apparatus nor operation looking to fixing the kidney in the lumbar region could therefore be entertained. In fact, the element of mobility held but a subordinate position in the matter of distress.

The question was thus narrowed to removal on the one hand, or bearing with the suffering on the other.

In view of the dangers of removal, the patient, at our suggestion, concluded to endure her distress as best she could, and left the hospital.

In a few days she returned, and said she had tried to work, but could not, and that, after consulting with her friends, she had concluded to submit to the operation.

Several cases had been reported in which, death occurring after extirpation, it was found that the remaining kidney was so far diseased as to be useless. There seemed no chance of this mishap here, as there was not, nor had there been at any time, evidence of kidney disease. During the menstrual disturbance there had been traces of albumen in the urine, but never casts nor renal epithelium, and in the intervals the urine was characteristically healthy. The final question was as to the absence of a kidney.

In view of the genital malformation, there was a possibility of but one kidney being present, but how to determine this was by no means easy.

The patient was placed in the knee-chest position, and careful percussion of the renal regions was made, the result being that there was dulness on the right side, and deep tympanitic resonance on the left; the bimanual palpation of the lumbo-abdominal regions, owing to the tension and thickness of the abdominal walls, was negative. The method of Simon was now open (catheterization of the ureters), but the fact that, in common with many others here, he had tried this method several times, and had never succeeded (save when a large vesicovaginal fistula existed), made him feel the attempt would be futile.

The method of examining the renal region by means of the hand in the rectum was discarded, for the reason that the pelvis was too small to permit of it without serious risk to the patient; it had been attempted while trying to determine the position of the uterus and ovaries.

The remaining method was the examination of the kidneys *in situ* after opening the abdominal cavity.

In planning the operation, his intention was to open the abdominal cavity in the median line as in ovariectomy, but, just before the day appointed, he saw a

case of extirpation of the kidney in consultation, in which, after the operation, owing apparently to the action of the ligatures, dangerous obstruction of the bowels had supervened. This caused him to reconsider his operation. Referring now to the position of the tumour in his case, it will be remembered that it was situated in the iliac fossa, and that it could be easily pushed down as low as Poupart's ligament; it was evidently closely attached to the fossa, as was shown by the fact that with the patient in the knee-chest position it did not fall forward toward the abdominal wall; it was probably behind the peritoneum under the sigmoid flexure. Evidently it could be removed by an incision just above Poupart's ligament. If its position was as he supposed, he should not have to open the peritoneal cavity. He could secure free drainage from the end of the ureter and the vessels, along a short tract downward, with no possibility of coming in conflict with an important organ. These considerations prevailed, and he decided in favour of the incision just above Poupart's ligament.

The patient being etherized, an incision was made parallel to Poupart's ligament, about an inch from it; its upper limit was on a level with the anterior superior spinous process of the ilium, its lower just outside the internal inguinal ring. The subperitoneal space in the iliac fossa was speedily reached. Pressure from above brought the kidney into the opening; an incision was made into a dense layer of connective tissue surrounding it, and at once the organ came into view. It was easily enucleated, and removed. Two ligatures were used, one for the ureter and one for the artery and vein. No blood was lost. It was evident that he had not entered the peritoneal cavity; but, before he could close the wound, the patient showed signs of heart-failure. This, however, passed off under stimulation. The wound was closed to within half an inch of the lower angle, through which the ligature of the pedicle was brought out, and a piece of doubled drainage tube introduced. The principles of Listerism were carried out during the entire operation. It lasted twenty-five minutes. Death occurred under symptoms of uræmic poisoning eleven days afterwards.

On post-mortem examination both kidneys were found to be absent. There was no trace whatever either of the right kidney or of the right ureter. The left kidney was removed during life. It did not occupy its normal position, but lay in a space in front of the iliacus muscle behind and to the side of the peritoneum. This space which contained the kidney extends from a little above the crest of the ilium to the brim of the true pelvis. The vagina and uterus were absent. Two large and healthy ovaries were present in normal situation.

The kidney removed, with the exception of increase in size, appeared to be normal.

Dr. Polk offers the following suggestion as to a method of procedure for establishing the presence of two kidneys: Take a large catheter, made of some substance like block tin, bend it to the shape of a Sims's sigmoid catheter; let the curve that passes into the bladder be as decided as it can be made, and yet not so great as to interfere with the ready passage of the instrument into the bladder. Suppose it to be the right ureter you desire to close. Introduce the instrument; then place the patient in the lithotomy position. Now carry two fingers as far into the rectum as possible.<sup>1</sup> Now place the catheter so that its curve in the bladder hugs the right pelvic wall; the end of the curve will pass directly across the line of the right ureter. Now press the fingers against the catheter, and the ureter will be sufficiently occluded to prevent all escape of urine. By means of the catheter in position (it may be double), the bladder can be thoroughly cleansed

<sup>1</sup> An instrument curved and grooved to receive the catheter might be substituted for the fingers for counter-pressure.

and emptied. As fresh urine flows in from the other ureter, it can be withdrawn and tested. As urine from a sound kidney is secreted at about the rate of a minim in four or five seconds, it will not require long-continued pressure to secure the amount of urine necessary for satisfactory examination. In the female the procedure is more certain of accomplishment than in the male, because we can, in a measure, fix the base of the bladder by traction upon the anterior vaginal wall by means of a tenaculum hooked into it just below the cervix, or, better, well to the right of the cervix, on the lateral wall, the traction being downward and to the patient's left.

The fact that a patient can live, and be in fair condition, eleven days without any kidney tissue, in Dr. Polk's opinion, would seem to prove that, if we can demonstrate the presence of a sound kidney, the removal of its diseased fellow (the disease reacting unfavourably on health and life) is not only permissible, but imperative.—*N. Y. Med. Journ.*, Feb. 17, 1883.

#### *Fixation of Wandering Kidney.*

Dr. ROBERT F. WEIR reports (*New York Medical Journal*, Feb. 17, 1883) a case of wandering kidney in a woman aged 33 years, in which, under antiseptic precautions, he cut along the border of the quadratus lumborum muscle, not going too close to the twelfth rib, to avoid the pleura, as Hall directs, and divided all the tissues down to the mass of fat which surrounds the kidney, and then stitched this to the edges of the wound, and so secured the kidney in a permanent position. He then left the wound open and let it fill up with granulations, and finally cicatricial tissue formed in sufficient quantities to close the opening and support the kidney. The patient did well, and is now in a much improved condition.

E. BASSINI reports (*Annali Univ. di Méd. e Chir.*, Sept. 1882) the case of a woman aged 27 years, in whom, without any history of injury, the right kidney had become displaced. The organ was easily reached by a lumbar incision when pressure was made in the abdominal surface and stitched by four catgut sutures to the edges of the wound. A complete cure, with entire removal of all symptoms, occurred within twenty days.—*Centrb. f. Chir.*, Jan. 27, 1883.

#### *Nephrectomy for Chronic Pyelitis with Large Phosphatic Renal Calculus.*

Dr. J. WILLISTON WRIGHT reports (*New York Med. Journal*, Feb. 17, 1883) the case of a woman, aged 34, who had suffered from constant dull pain in the right lumbar region for nine years. Upon examination a tumour was recognized by the touch in the right loin. It was as large as the fist, very hard, quite movable, and very sensible to pressure. At about the centre of its inner margin there was felt a nodulated mass, about the size of an English walnut, which was much harder than the remainder of the tumour, and which was much more sensitive, the patient complaining of nausea and great pain when it was handled, and especially when it was compressed between the fingers.

Believing the tumour to be the displaced kidney, and the nodulated mass a stone in its pelvis, Dr. Wright made use of the aspirator needle, passing it through the tumour both from the lumbar region and from the loin in various directions, but without being able to encounter the calculus, probably from his great care in avoiding the large vessels in its neighbourhood, as at the former attempt.

He now advised the removal of the whole kidney.

On October 14th, 1882, Dr. Wright extirpated the right kidney through an incision six inches in length, made along the border of the rectus muscle on the

right side. Afterwards the left kidney and other important organs of the abdominal cavity were examined and found to be normal.

The patient did fairly well for a week, when symptoms of obstruction set in due to the formation of an abscess in the site of the wound, which was cut into, and over the stump of the renal vessels a fluctuating tumour of the size of a hen's egg was found and opened, and from it about three ounces of very fetid pus were discharged. As soon as the abscess was emptied, the ascending colon, which had evidently been obstructed at that point, as well as the other divisions of the large intestine, began a series of writhing movements, which could be seen plainly through the abdominal walls, accompanied by loud gurgling sounds, as of gas rapidly changing its locality. A considerable quantity of gas now discharged from the anus. Within twenty minutes the patient ceased vomiting, and said she felt much better. The abscess cavity was washed out with a weak solution of carbolic acid, a drainage tube introduced, a hypodermic injection of morphia administered, and the patient left to rest.

On January 13th it is noted that the patient is feeble, owing chiefly to prolonged suppuration from the cavity of the abscess, which still continues to drain itself into the bladder. She passes an average of about thirty ounces of urine a day, which, aside from the pus it contains, is of a normal quality. She sits up for a short time each day, has a good appetite, good digestion, and is now evidently improving. Indeed, so far as the operation and the ability of her remaining kidney to do the work of excretion are concerned, he thinks he may safely say that the patient has recovered.

In commenting upon his case Dr. Wright says that upon the proper management of the bloodvessels of the kidney and ureter will often depend the success or failure of the operation, so far as the life of the patient is concerned, there can be no room for doubt.

Judging from his experience with a single case, if he was to do the operation again he would endeavour to isolate the four diverging branches of the renal artery, as well as the renal vein, from the mass of fat and connective tissue surrounding them, and ligate each one separately, even at the expense of a little longer exposure of the peritoneum, rather than to tie them *en masse*, as was done in the present case; moreover he would cut the ligatures short and leave them to take care of themselves, in the hope that they would either become absorbed or encysted, rather than to lead them out through the wound, thereby encouraging the formation of a suppurative tract.

To a neglect of these precautions he attributes the occurrence of the abscess which delayed the recovery of his patient during the past three months.

With regard to the ureter, he believes that whenever pyelitis is present, and especially whenever a calculus exists, either in the sinus or in the pelvis, this tube is necessarily diseased, and that an attempt should always be made, therefore, to remove as much of it as possible by ligating its vesical extremity and bringing the remainder of it out through the lowest part of the wound, as recommended by Mr. Thornton; another argument, by the way, in favour of laparotomy over the lumbar incision.

Had this been done in the present case, he has no doubt that his patient would have been spared the annoyance of having an abdominal abscess drain itself into her bladder, although, under the circumstances, it could hardly have selected a safer place, aside from the external wound.

#### *Extirpation of the Kidney.*

Dr. BRUNTZEL, of Breslau, has successfully removed the left kidney with a colossal fibroma of its capsule. The fact is worth recording as another triumph

of abdominal surgery, for the growth weighed thirty-seven pounds and a quarter.

The patient was a female, thirty-three years of age. The tumour was first noticed five years before, and had gradually increased in size; it was painless. When seen by Spiegelberg and Bruntzel in 1879, it was thought to be probably connected with the uterus; menstruation was natural, and had been so since the age of fourteen. An exploratory puncture revealed nothing. In June, 1882, there was much emaciation, but no genuine cachexia; the swelling reached from the ensiform cartilage to the pubic symphysis, and distended the abdomen uniformly in all directions; there were no physical signs of disease in any other organ. Abdominal section was performed in July, with strict antiseptic precautions; the incision extended from the xiphoid process to the symphysis pubis. The tumour was found to be retroperitoneal in situation. The descending colon was felt in front of it at a hand's breadth from the mesial line. Punctures were made into the fluctuating growth without success; but by perseverance the enormous tumour and kidney were got out; the vascular pedicle was secured, the wound closed and drained in the manner of an ovariectomy; and compression and orthodox Listerism were adopted as dressings. There were marked signs of collapse on the removal of the fibroma, which were combated by hypodermic injections of ether and the performance of artificial respiration. The tumour was found to be a gigantic fibroma, which had originated in the left renal capsule, and was composed of a number of lobes, of sizes varying from a child's to a man's head. In this dense fibrous structure there were some areas of a loose, fatty nature, and in the centre was a reddish-yellow area of softening, with a thrombosed vessel in its neighbourhood. The left kidney was seated in a hilus, and its structure was quite normal. The sensation of fluctuation that had been felt was probably due to the presence of the intermingled fat. The operation lasted two hours and a half.

After the operation the pulse was very frequent, the temperature varied a little, the belly remained quite flaccid, and the discharge sweet. Vomiting never occurred, but some discomfort was felt from the loaded state of the tongue and mouth. The quantity of urine was very small for the first six days, but after that it attained to the normal, and so remained. A loose stool was passed on the eighth day. The superficial sutures were removed on the seventh day. The drainage-tube was done away with on the ninth day. On the tenth day something sudden happened, for the temperature rose, and the patient became unconscious and collapsed. This accident was attributed with justice to the descending colon having been ulcerated through, and the escape of a little feces from the small sinus yet remaining. The fistula healed, after being cauterized, in the beginning of August. A fresh escape of feces began at the end of the same month, and, although very small in amount, lasted. Another accident of a very interesting nature happened immediately after the operation, namely, paralysis of both upper extremities. Bruntzel speculates on this being of a reflex mechanism. It lasted in the right hand almost six weeks, and longer in the left. For treatment faradization was used. We should like to know more of the distribution and electrical reaction of this paralysis. Notwithstanding these unfortunate occurrences, the patient did so well as to get up at the fourth week, and her weight was seventy-five pounds (just as much again as the tumour weighed). Further improvement of the general health took place, but menstruation had not returned.—*Med. Times and Gazette*, Dec. 16, 1882.

*New Mode of Affording Permanent Relief to Intractable Chronic Cystitis and Confirmed Prostatic Retention of Urine.*

Sir HENRY THOMPSON, F.R.C.S., believes that if it were possible to suspend all action on the part of the bladder, in such cases, for a few days only, to prevent any accumulation of urine within the organ, to allay the constant and painful want to pass urine, and also, at the same time, to abolish catheterism altogether, with its irritating effect on the urethra, the inflammation of the bladder might subside, and its tolerance of urine might considerably increase.

This object, it seemed to him, might probably be attained by a proceeding of the following kind: First, placing the patient in the lithotomy position, under ether, he proposes to pass a grooved median staff into the bladder, and make, from the raphe of the perinæum, a small vertical incision just above the anus, large enough only to admit the index finger—the incision to terminate in the staff at the membranous portion of the urethra, which should be divided for half an inch at most, so as to admit the finger to traverse the canal to the neck of the bladder. Then, having withdrawn the staff, he proposes to insert a large vulcanized catheter or tube, say about No. 20 (English scale), with its extremity just within the bladder, fastening it there by tape to a bandage round the waist; the tube to be retained as a channel for the urine, for several days at least.

An opportunity soon offered of making an opening in the manner described, for a patient at the age of sixty, who was passing the catheter every hour, and whose vital powers were at the lowest ebb from constant suffering and loss of rest, but whose constitution was apparently sound; and he placed in the bladder, by the new passage, an India-rubber catheter, so that the urine might flow off continuously into a receptacle as fast as it arrived in the bladder. The relief was immediate, and most remarkable. He enjoyed long periods of unbroken sleep, and was unconscious of any pain; while the urine itself, which had been charged with muco-pus and blood, and had been alkaline and offensive in the highest degree, assumed in the course of a few hours a healthy colour, an acid reaction, and was almost clear. In two or three days, the patient had regained appetite and digestion, became cheerful, and showed a change for the better, which no one had been sanguine enough to anticipate. On the eighth day, he removed the catheter from the wound; during the next two days, urine issued by that route at intervals of some hours; but the wound, which was very small, rapidly closed, and the catheter was, of course, again necessary. But the passing of the instrument was no longer painful; the bladder was not inflamed, and could now retain urine three or four hours without inconvenience; while the patient himself, in less than three weeks from the operation, was enjoying an active life out of doors, having been long confined to his room in the suffering condition which has been described in general terms above.

He saw his patient on the 14th of October last. The report, in his own words, was then as follows: "I use the catheter now only six times in the twenty-four hours, instead of eighteen or twenty times. The urine is a little cloudy—mostly acid, sometimes the reverse. I can drive for two or three hours in the afternoon without pain or fatigue, taking usually a morning walk of a mile or more. My general health is good. The degree of relief afforded by the operation can scarcely be exaggerated."

On the 30th of June last the same operation was performed on a gentleman, eighty-three years of age, who was suffering from unusually painful and frequent micturition, the interval rarely amounting to three-quarters of an hour either by day or night. He could, however, nearly empty his bladder by his own efforts, and required the catheter only once a day; its employment affording very little



relief. It was one of those rare examples of such a condition existing, in which no calculus and no organic changes in the urinary organs could be discovered. As his constitution was excellent, he did not hesitate (his age notwithstanding) to pursue the course described in the preceding one—failing to find, on examination, either tumour of any kind, or calculus. The immediate relief, however, was so great, that he did not remove the India-rubber tube from the wound until the twelfth day; and he was then very unwilling to part with it, since he had not been so comfortable for upwards of a year. He had also been able to dispense altogether with the use of morphia, which, up to the time of the operation, he had been compelled to take in full doses. The wound rapidly healed; he retained urine from two to three hours, using his catheter only once in the day as before. Such was the report he gave him in the early autumn, as he left town. During his absence, he ventured to take much more exercise than he had been of late accustomed to, and had a relapse. When he saw him on his return (October 7th), he was gradually improving, and was very grateful for the change; saying he would gladly again submit to the operation, if anything like the old painful condition reappeared, as he had experienced nothing but relief from the proceeding. However, such a course does not at present appear to be necessary or imminent.

Such are two typical cases widely differing; the former an example of a comparatively common condition, the latter one of very rare occurrence. In both instances, he attributes the benefit to a temporary suspension of function in both the bladder and the urethra; in the bladder as a containing viscus, in the urethra as a channel or transmitting one.—*Brit. Med. Journ.*, Dec. 9, 1882.

#### *Polypoid Tumour of the Bladder.*

At the meeting of the Royal Medical and Chirurgical Society, held Jan. 23, 1883, Sir HENRY THOMPSON gave a short account of four cases in which he had removed polypoid tumours of the bladder through the perinæum; an operation of which there have been few examples, and which was worth consideration, as an attempt to deal with growths which, when removed, had always proved fatal. The first case was that of a lady, aged 31, who had been brought under his notice by Dr. Philson, of Cheltenham. The first symptoms of vesical disease were noticed in 1876, when there was frequent and very painful micturition; and subsequently, there was much hæmaturia, and several attacks of acute cystitis. An examination with the sound showed no calculus or definite tumour, but the walls of the bladder were felt to be soft and flabby. The urethra was dilated, and a sessile growth, scarcely pedunculated, was removed from the base of the bladder. There was a good deal of bleeding at the time, but, after a week, micturition ceased to be painful; in three weeks she had control over her urine for four hours at a time. She rapidly regained good health, and there had been no return of the symptoms. An examination of the growth by Mr. Stanley Boyd showed a vascular tumour, with several short pedicles, and a velvety covering of club-shaped processes, about one-sixteenth of an inch long. The second case was of a man, aged 41, whose symptoms dated from 1861. There was great irritability of the bladder, and much painful hæmaturia, which had not been materially relieved by styptics. A suspicion of vesical tumour was confirmed by examination with the finger, and a large mass removed by a central incision through the perinæum. The case, however, was seen in too late a stage to avert a fatal issue. No necropsy was obtainable. The third case was that of a medical man, examined by the sound in connection with Dr. George Johnson and Dr. Cupman, in December, 1880. A note was made at the time, that the walls of the bladder “felt soft,” an expression which Sir Henry Thompson was in the

habit of using to describe an abnormal condition, in which the signs of tumours were not definite. Styptics gave temporary relief, but after about six months the symptoms became acute, and recourse was had to digital examination. Polypoid growths were felt and removed by lateral forceps, from the side of the bladder. The recovery was uninterrupted and rapid. The fourth case was of a man, aged 67, short, stout, and heavily built. He had had occasional hæmaturia since 1876, with occasional passage of uric acid calculi. On May 26, 1882, lithotomy was performed at one sitting, and two hundred grains of uric acid were removed. During the summer and autumn, there was much pain and loss of blood, and on January 27, 1883, a digital exploration was made. The perinæum was deep, and the operation presented some difficulties, but a tumour was successfully removed from the base of the bladder. The progress had been favourable on the whole, but some gouty symptoms had developed on January 22d. Microscopical specimens of the tumours were placed on the table. They were all fibromata.—*Brit. Med. Journ.*, Jan. 27, 1883.

### *Suprapubic Lithotomy.*

This somewhat neglected operation has been done quite a number of times in Paris within the past few years. Prof. Guyon reports in the first number of *Annales des Maladies des Organes Génito-Urinaires*, Dec. 1882, five cases of stone in which he had operated above the pubes within a twelvemonth. In all his operations he adopted the ingenious plan, recommended and practised by Prof. Petersen, of Kiel, of raising the distended bladder out of the pelvis by means of a colpeurynter placed in the rectum, and inflated with air or water.

As suprapubic lithotomies are rather rare, and as these operations were interesting and instructive, we give a brief epitome of them.

I. The first operation was done November 19, 1881, upon a man 72 years old. Nine days earlier an attempt to crush had been abandoned, because the stone was found to be too large and too hard. The method of Petersen was exactly carried out, and antiseptic precautions, including the spray, were taken. The extraction of the stone was very easy. The bladder was not sewed up, but a large red rubber drainage-tube (10 mm. diam.) was inserted into it, and brought out of the lower angle of the wound, and a Lister dressing applied. A rubber catheter (No. 18) was placed in the urethra. The drainage began at once to find its way out alongside of the tube—not through it—and the Lister dressing was soaked, and had to be disused. The catheter provoked so intense a urethritis that it had to be removed the eighth day. The wound was healed the fortieth day. The stone weighed 84 grammes (nearly 3 oz.), dry, and measured 6 x 4 x 3 centimetres.

The patient was in bad condition before operation, but there was little pus in his urine, and it was acid in reaction.

II. The second operation was on a man of 69, in good general condition, with little evidence of cystitis, and none of nephritis. Lithotomy was attempted, and failed, because the stone could not be crushed. Suprapubic lithotomy was done January 4, 1882. A venous plexus was encountered, which bled freely when punctured, but ceased to bleed as soon as the tension of the bladder had been relieved by its incision and the removal of the rubber balloon in the rectum. One suture was placed in the upper angle of the abdominal wound. A drainage-tube doubled into a U-shape was placed in the bladder, a catheter was left in the urethra, and a Lister dressing applied. The patient died in three days of diffuse subperitoneal infiltration. The stone weighed 54 grammes (nearly 2 oz.), and measured nearly 6 x 4 x 3 centimetres (57 x 43 x 28 millimetres).

III. The third operation was done upon a man 69 years old, in good general condition, with no kidney disease and little cystitis. An attempt at lithotripsy having failed, eleven days later, March 8, 1882, suprapubic lithotomy was carried out. Two stones were easily removed. Antiseptic precautions were used, and a Lister dressing applied after inserting a siphon tube in the bladder. No catheter was placed in the urethra. The siphon apparatus did not work perfectly, and was replaced with two simple unfenestrated tubes ("*en flûte de Pan*") introduced into the bladder, and carried over the pubes to a urinal between the thighs. After this the Lister dressing could be used to the end of the treatment. On the eleventh day the tubes were removed, and a catheter placed permanently in the urethra. The patient's wound was completely cicatrized the fifty-first day. Of the stones, one weighed 55 grammes (nearly 2 oz.), and measured  $5 \times 4 \times 2$  centimetres. The other weighed 58 grammes (about 2 oz.), and was almost exactly the same size as the first.

IV. The fourth operation was done on a man 57 years old, in bad condition, and in whom lithotripsy had failed ten days before. The operation was done May 4, 1882. It was simple. As in the last case, two rubber tubes were placed in the bladder, and two deep sutures placed in the upper angle of the abdominal wound. A Lister dressing was applied (so the account implies). The patient died the twelfth day. The stone weighed 56 grammes (about 2 oz.), and measured  $6 \times 4 \times 2$  centimetres.

The author considers this one of those cases an operator would refuse if he aimed only at success in operating, but must accept if he would furnish temporary relief and the only chance of recovery to the sufferer.

V. The fifth operation was done May 20, 1882, upon a man 60 years old, in very bad condition, with a voluminous stone that filled the bladder, and was immovably fixed in such a way that no instrument could be passed *per urethram*. The stone was so firmly fixed in the pelvis and so tightly held by the bladder that no instrument could be passed round it, and it had to be gouged out and broken up before it could be removed—a proceeding which occupied more than an hour and a half. A new siphon arrangement was placed in the bladder, but did not work well, and had to be replaced with two rubber tubes. After the sixth day a catheter was placed permanently in the urethra, and no other means of drainage employed. The Lister dressing (it is to be inferred) was used, and the wound was healed by the fifty-sixth day.

#### *Treatment of Chancre with Pyrogallie Acid.*

At the meeting of the Académie de Médecine of Paris, held January 2, 1883, M. VIDAL advocated the employment of an ointment of pyrogallie acid, 10 or 20 parts to 80 parts of fresh lard or vaseline, in the treatment of phagedenic chancres. Starch may be substituted for the vaseline when it is desired to apply the dressing in the form of a powder.

Under this treatment the ulceration is rapidly arrested, and the chancre takes on a healthy appearance; it is quite as efficacious as the cautery, and only causes burning for a few moments. The dressing should be applied twice daily; both the wound and the skin become black in appearance; the virulence of the sore is destroyed in about three days, and this treatment should be discontinued when granulations appear, and the powder of subcarbonate of iron then applied.

M. Vidal states that absorption only occurs to a limited extent when pyrogallie acid is brought in contact with the subcutaneous cellular tissue; its presence in the urine can be determined by the addition of perchloride of iron.—*Journ. de Méd. de Paris*, Jan. 6, 1883.

1883.]

*Ligature of the Arteria Innominata for Subclavian Aneurism.*

At the meeting of the British Medical Association, held in Worcester, August last, Mr. Wm. THOMSON read the report of the following case before the Section of Surgery:—

John M., aged 49, a locksmith, was admitted to the Richmond Surgical Hospital, on February 7, 1882, suffering from aneurism of the right subclavian artery. He was a man of good development, healthy looking, and of dark complexion. His hair was grizzled. He had never had syphilis, had lived a fairly temperate life, and had been for eighteen months in America, where, in the war with the Confederate States, he had received a bayonet wound on the right scapula. For two years and a half he had been suffering from pains in the right arm, which he thought were due to rheumatism; but, ten months before his admission, he first noticed a small tumour, "about as large as a marble," in the posterior inferior triangle of the neck. He had sought advice at another dispensary, and at our own, but he had refused to come into hospital until he found that the tumour was steadily progressing, and that, in addition to increase of pain, he was unable to work. The tumour, as it now appeared, was globular, and about two and a half inches in diameter, pulsating violently, with evidently very thin walls. It occupied the posterior inferior triangle, its inner margin being close against the outer edge of the sterno-mastoid muscle. The finger passed behind the muscle, received a very strong impulse, and the vessel, so far as it could thus be traced towards its second stage, appeared to be enlarged. The pulse varied from 130 to 140, and was very full. No pulse could, as a rule, be felt in the right radial artery; but occasionally it could be made out as a faint flicker. The arm could not be raised from the side; the pain in the shoulder was unbearable, and the patient lay in bed with his left hand grasping that part tightly, as he said it gave him some relief. The heart-sounds were healthy. The pupils were regular. There was no cough, and no laryngeal irritation. The other functions of the body were natural.

The patient was kept under observation for a week, being at the same time treated with tincture of digitalis, but without making any impress upon the rapidity of the pulse. The majority of opinion, on consultation, was in favour of attempting operation upon the first stage of the subclavian, and, in the event of that proving diseased, upon the innominate. The case was put before the patient, who consented to the proposal; but, after an interview with his son, he declined it. He, however, remained in hospital, and for some time the iodide of potassium treatment was tried, but without any appreciable result. The pulse still continued high, and the tumour increased in size; while the pain in the arm was combated by frequent hypodermic injections of morphia.

The patient suddenly took his discharge on March 30th, as he said he had "private business" to transact. He once visited Mr. Thomson at his house some weeks afterwards. The tumour had then grown to a considerable size, passing upwards in the neck. The pain kept him from sleeping, for he had now no hypodermic injections. The hand was quite numb and oedematous. There was no pulsation to be felt in the radial or brachial arteries. He promised to come into hospital next day, but he did not return until May 22d. He now stated that, during the preceding night, the tumour ceased to pulsate for over an hour. When Mr. Thomson saw him, pulsation was as violent as ever; all the local symptoms were aggravated, but the pulse had fallen to 100. Measured by the callipers, the tumour now marked three inches and a quarter in diameter in all directions. A further consultation was held, and ligature was again determined upon, but on the 29th, the day but one fixed for operation, he was sent for to see the patient. All

pulsation had stopped in the aneurism, which was now hard and tense. He resolved, therefore, to postpone any operative interference. The pulsation returned after about ten hours, and next morning was as bad as before. He had now three-minim doses of tincture of aconite every three hours, but the pulse was not affected.

On the 31st, pulsation stopped for fifteen minutes, but then returned, accompanied by great pain. He was now ordered three-minim doses of tincture of aconite every hour for twelve hours, the effect to be watched. The pulse-rate, which had been 116, was reduced to 96; but next morning the pulse was full and bounding at 100.

On June 4th, the patient said the tumour had ceased to beat several times, but this was not verified by the resident pupil. The pulsation was, however, feebler. During all this time the tumour continued to grow in size, until it reached three inches and a half in diameter at the base. The movement of pulsation was observed over a large area. When he sat up, the shoulder and the whole scapular region rose and fell with each pulsation of the aneurism. The hope which was entertained of spontaneous cure did not appear likely to be fulfilled; and, in face of the fact that the disease was progressing, it was unanimously agreed that operation should not longer be delayed.

Accordingly, on June 9th, the patient, being deeply anesthetized, was placed in the usual position on his back, with the head thrown well towards the left side. A free incision was made along his clavicle, from the anterior border of the sterno-mastoid outwards, and joined its inner extremity by an incision along the anterior border of the same muscle. The clavicular attachment of the muscle was divided, and turned up, and then the sterno-hyoid and sterno-thyroid were cut to discover the carotid, carefully avoiding the branches of the omo-hyoid plexus, which could be seen. The vessel was of very large size, so much so, indeed, that some of those present thought Mr. Thomson had arrived at the innominate. This belief was encouraged by the fact that, at first, pressure upon it with the finger stopped pulsation in the carotid higher up, and also in the tumour; but this did not always occur, and was evidently the result of a pressure communicated from a distance to the subclavian. He now went further down, in search of the bifurcation; but this was an extremely tedious and anxious proceeding, and he was compelled to divide nearly the whole of the sternal attachment of the sterno-mastoid. Coming at last upon it, the origins of the subclavian and the carotid, at what was an alarming depth, the difficulty of reaching the innominate beyond was increased by the occurrence of a heavy thundercloud, which seemed to shut out all the top light. A mirror was then used to throw light into the wound, but without much good result, and he was here much delayed. The sheath of the innominate was at last slowly scraped through; and, using an ordinary aneurism needle for this purpose, he succeeded in passing it under the vessel, which appeared to be healthy. He then determined to thread it with ordinary silk, and to use this to draw back the tape ligature; but failing in this, as the opening between the sheath and the vessel was too small, he withdrew everything, and, threading a special needle (invented by Mr. Barwell), with the curved portion movable by a lever, he introduced this with comparative ease. He then, before tying, tested the effect of pressure upon the vessel between his finger and the tape, lifting the vessel freely from its bed; and, finding that all movement ceased in the aneurism and in the carotid, he secured the ligature with three knots, drawing the ends with moderate firmness. The edges of the wound were brought together, and a drainage-tube having been introduced into the lower part, an antiseptic dressing was applied and fixed by means of an elastic roller. The arm and shoulder were also swathed in sheets of wadding, which had been previously heated. He was

at once carried to bed; and Mr. Thomson saw him again in about half an hour. The left side of the face was cold, but the pupils were equal. He was only recovering from the effects of the ether; but it was noticed that, when he attempted to ask some questions, he always broke down in the middle of the sentence, and then seemed to be trying to recollect what he wished to say. This was the only symptom of brain disturbance that ever presented itself; and, in the evening, he seemed to have his mental faculties unimpaired. He was ordered ice, milk, soda-water, and beef-tea. Two hours after the operation, the patient complained of pain in the shoulder, and had one-third of a grain of morphia hypodermically; this was repeated in two hours. He slept for three hours during the evening. The evening temperature was  $100.6^{\circ}$  on the right side;  $99.4^{\circ}$  on the left; pulse 136. At eleven o'clock, the temperature was  $99.6^{\circ}$  on the right side;  $99^{\circ}$  on the left; pulse 120. He had no pain.

The patient did fairly well until July 8th (thirtieth day), when pulsation was visible at the apex of the flap, coming from the position of the innominate. He passed a very good day. At 11.15 P. M. the patient noticed that he was bleeding. The hemorrhage had stopped when he was seen by the house surgeon. Mr. Thomson saw the patient soon afterwards. The wound was examined; there was no bleeding. The dressing was renewed, and a shot-bag placed over all. The amount of blood lost was about three ounces. A hypodermic injection of morphia was given, and ice was ordered.

No further hemorrhage occurred until July 17th (thirty-ninth day). At half-past three this morning a very severe hemorrhage took place. When the residing surgeon saw the patient it had stopped; but the clothes were saturated and the blood lay in a large clot on the floor. The patient was greatly blanched and collapsed. A hypodermic injection of ether was given. He had a cold, clammy sweat and flickering pulse. His voice was a mere whisper. He did not lose consciousness, but said he could not see. The patient then rallied somewhat, and complained of pains in his head and limbs. Increased pressure was made with shot-bags, the dressings not being disturbed. Warm jars were applied to the feet and body. Further stimulation was prohibited. Ice and beef-tea in small quantities were ordered.

July 18th (fortieth day). There was no bleeding; he was very weak; the treatment was continued as before. The pain in the limbs was treated with morphia.

July 19th (forty-first day). He had rallied considerably. His expression was much improved; colour had returned to his face, and his pulse was stronger but jerky. He had pain in the limbs. As his bedding had not been disturbed since the hemorrhage, he was carefully lifted by seven assistants, and a clean mattress, etc., were substituted.

July 20th (forty-second day). He complained of difficulty of breathing at 2 A. M., and much pain. Half a grain of morphia was given subcutaneously. He slept for some time, and died quietly at 8.15 A. M. There was no recurrence of bleeding.

*Post-mortem Examination.*—A necropsy was made a few hours afterward by Dr. Woodhouse, pathologist and assistant physician, and Mr. Thomson; but, as any interference had been forbidden by the patient's son, this had to be done to a limited degree. Only the parts actually involved in the disease and the operation could be removed. A small opening in the skin was the only part that was unhealed; the rest of the incisions were firmly cicatrized. The diameter of the tumour was  $2\frac{1}{2}$  by  $2\frac{1}{2}$  inches. When the skin was reflected, there was no trace of infiltration of parts, and no sign of blood. The opening in the skin led into a small cavity containing about a drachm of pus. When this was removed, the

cavity was found to be about three-quarters of an inch in depth above and slightly behind the right sterno-clavicular articulation, and pointing downwards, backwards, and inwards. It received the end of the little finger like a thimble. The tumour itself was covered by skin and platysma, and some outer fibres of the sterno-mastoid muscle; the omo-hyoid was stretched across it. The phrenic nerve passed along the inner side, borne off by the anterior scalenus. The muscle was bulged forwards, but the nerve did not seem to be pressed upon. Across the whole surface of the tumour were, lightly stretched and flattened, large roots and branches of the brachial plexus. In the anterior inferior triangle, the tissues overlying the great vessels were so matted together that they could be dissected with difficulty, especially at the lower part of the carotid. The internal jugular vein was collapsed. The common carotid artery was full and firm to the touch as far as the bifurcation. The subclavian vein was empty, and was tightly stretched along the lower and anterior part of the tumour. Its coats were thin, and in two places, near the junction of the internal jugular, there were small translucent patches, apparently from thinning of the internal coat. A few drops of pus oozed out of the lower end of the carotid into the ulcer which terminated the sinus. On turning forward the anterior scalenus, the aneurism was found to involve the second part of the artery. The tumour rested upon the first rib, and pressed against the clavicle in front. These bones were removed, the rib with its attachment to the aneurism, and as much of the aorta as could be reached was cut across, and the parts taken out *en masse*.

The tumour was found to spring from the posterior part of the second and third stages of the subclavian artery. It was flattened below, where it rested on the rib, and passed upwards for three inches, ending in a dome-like surface. Corresponding to the position of the clavicle it was constricted. Its clavicular portion measured  $2\frac{1}{2}$  inches antero-posteriorly; its basal,  $2\frac{3}{4}$ .

The artery was elsewhere normal in size. It formed a cord from which the tumour sprang. The axillary portion, so far as it could be removed, was firmly plugged. All the vessels of the first stage were traced, and were pervious.

The ulceration, which was somewhat larger than a sixpence in area, was situated at the bifurcation of the innominate into the subclavian and carotid arteries. It involved the anterior portion of the three vessels, and looking into it, the clots blocking the three vessels could be seen. The surface was gray and shreddy. There was no staining of blood visible. The vessels were partly slit, and a syringe was used to force water through in the direction of the ulcer, but although this was carefully tried with each vessel, not a drop passed through. The incisions were extended along the vessels towards the ulcer.

The wall of the innominate was thickened almost from its origin, and this thickening increased gradually as the side of the ligature was approached until the depth was about two lines. The clot was firmly adherent to the walls, and extended backwards through the greater extent of the vessel. At its cardiac side was a small tongue of organized clot rather loosely attached; and between it and the firmly adherent clot were some retiform bands of fibrous tissue deeply stained with blood.

The subclavian was found to be empty, except at its cardiac end, which was well blocked with a firmly adherent clot. This projected towards the aneurism for about half an inch. No water could be forced through.

The common carotid felt solid, but on opening it, it was found that the centre of the clot had degenerated, and was occupied by pulpy purulent material. The walls of the vessel were thickened. The clot terminated near the bifurcation into the external and internal carotids.

The aorta was thickened, atheromatous, and, in patches, calcareous. The lung and pleura as seen on the right side were healthy.

An incision was made into the aneurism from summit to base. It contained about half an ounce of dark, thick blood, and in the centre was some passive clot occupying a cavity about the size of a walnut. The process of cure was evidenced by fibrinous layers upon the walls to the extent of a third of an inch, and on the inner sides of this coating were masses of coagulum less firm, but evidently undergoing consolidation.

A prolonged and careful search was made for traces of the ligature, but none could be found. On the posterior of the innominate, opposite the ulceration, was some fatty tissue intimately adherent to the wall, which could with difficulty be cleaned.

A more minute examination of the parts was subsequently made. The vessels were all divided into the ulcer. This showed that the innominate had been constricted at about a quarter of an inch from the cardiac margin of the ulcer. The walls were not divided, and the ulcer had not taken origin at the seat of the ligature. The vessel was not occluded by adhesion of the inner surfaces, but a chink remained at the ligatured portion through which the clot continued, and had been united to the clots in the subclavian and carotid. The clot in the subclavian was well established. The ulcer had eaten into the clot in the innominate at its centre, and had in this way caused the hemorrhage.

In order to search for the ligature, an inch of the posterior wall of the innominate was cut out, and several sections of it were made by Mr. P. S. Abraham, Curator of the Royal College of Surgeons' Museum, but no trace of it could be found. The coats of the vessel were undivided.

In commenting on his case, Mr. Thomson says: "I believe that ligature of the arteria innominata may be safely done. A careful study of the cases which have been published will show how very near many of them came to success. Mott's case, and Gräfe's, were up walking about before the wound was absolutely closed, and it was owing to some indiscretion that the recent adhesions were torn and that hemorrhage was set up. In Gräfe's, Mott's, Lizar's, Gore's, Bland's, and Bickelsteth's cases, the innominate was more or less occupied by firm clot. The carotid was occupied by a clot in Gore's, Arendt's, Mott's, Lizar's, and Bland's cases. The subclavian was closed in Smyth's case (after ligature of the vertebral), almost up to the thyroid axis; and in Arendt's. It is to be observed, with reference to these facts, that in some of the reported cases details are not given; and that in others the patients did not live long enough for such processes to be set up effectively. Here, at all events, in a considerable proportion of cases, we have that condition present which is regarded as one of the essentials of success in deligation of an artery in its continuity. The clot is found to be present, not only in the innominate, but also in the two large vessels which branch off from it. Death in the majority of cases, however, resulted from hemorrhage, and this chiefly from ulceration of the ligature through the vessel, and an absence of sufficient adhesive power in the tissues so divided to make closure permanent. It was an accidental result, if I may call it so, not a result to be looked for as a necessity. The possibility of obtaining obliterating clots in the innominate, subclavian, and carotid, or in the innominate and carotid, being shown, it only remains that, to make a long stride forward to success, we should use an antiseptic animal material which will not divide the vessel, but only keep its walls approximated for a sufficiently long time. So we find Mr. Lister declaring that, using such a material, 'for my own part I should now, without hesitation, undertake ligature of the innominate, believing that it would prove a very safe procedure' (*Lancet*, April 3, 1869). It was with a like belief that I undertook this operation.



"It is true, I regret to say, that in my case the old tale of hemorrhage was repeated; but there can be no doubt that it was not here set up by the ligature cutting through the vessel. The position of the ligature is only marked by a constriction, and the margin of the ulcer does not come within more than a quarter of an inch of that line. The coats are not divided, and the ligature appears to have done its work by gripping the vessel until a well-organized clot was formed. The clot had also formed on the distal side, so that the ulcer, as in most cases, had for its lateral walls nothing but organized clot in the three vessels. This clot was gradually thinned by the ulcerative process, and at last, as I believe, a weak spot in the portion in the innominate yielded to pressure and gave way. It may be said here that the purulent degeneration of the centre of the clot in the carotid was probably due to the access of pus from the ulcer.

"But, it will be asked, what produced the ulceration, and why did my case fail if I used the precautions which I have faith in? My answer is, that the ligation did not fail. It held the vessel until a firm, organized clot was formed; and that if an ulcer had not formed, at a distance from the ligature be it remembered, the patient would have recovered. The history of the ulcer is associated with the use of the drainage-tube. This I left in for about six days, except when it was removed to be cleaned. When it was finally removed, it left behind it a sinus leading down to the bottom of the wound. The wound was then perfectly aseptic, the patient's temperature normal, and everything going on well. But this track, holding some discharge, provided a nest for septic organisms when these unhappily got access. From that on the vessel was subjected to the eroding action of pus, small in quantity though it was, as it lay in a pocket on the face of the vessel. Knowing what had happened in Mott's case, I correctly feared that an ulcer had formed; and although I did all that I could, its action could not be stayed. How the evil originally arose I can only surmise, but I believe it was owing to the difficulty of keeping the dressing in accurate position at the neck.

"Judging from my experience, I should certainly, in another case, remove the drainage-tube early, and endeavour to get speedy closure of the wound in its deeper parts. It is to be borne in mind that there is much retraction of the tissues, and that a large hole is left after the operation is terminated. The skin is brought together and heals much more quickly than the deeper parts, which are not approximated in the same way. The clavicle also assists in keeping the soft tissues from falling together and getting an early closure. This has happened in every case on record, and it adds enormously to the risk. To overcome this I should, in another case, apply carefully adjusted sponges outside the dressings, and over these place light shot-bags (a few ounces) so secured that they would exert constant and moderate pressure upon the wound. The head should also be brought well over to the right side, so as to relax the tissues, and by that means an effort be made to aid the rapid consolidation of the parts.

"It has been suggested by some surgeons that, in such an operation as this, the carotid ought to be ligatured at the same time, with the object of cutting off the reflux current of blood from contact with the seat of ligature on the innominate. Thus Barwell (*On Aneurism*, p. 53) thinks this question 'demands of necessity an affirmative answer. Blood will at once, when the innominate alone is ligatured, find its way through the carotid into the subclavian in quantity large enough to compromise the cure. The ligature on the carotid does not complicate the operation, nor add to—indeed, it rather subtracts from—the danger.' But, as a matter of fact, the history of the cases shows that it is not necessary. In a large number, as in my own, a clot had formed up to the bifurcation of the carotid and occluded it. In Smyth's case, which was successful after ligature of the vertebral, he tied the carotid at the time of ligaturing the carotid, but that did not

save him from fearful hemorrhage. It was only when the vertebral was secured on the fifty-fourth day that I relieved my patient from the risk of death. I believe that a return circulation had been set up through the vertebral, and that, as it was likely a clot had not formed in the first stage of the subclavian in consequence, the securing of this vessel would prevent further hemorrhage. The other vessels in the first stage, however, remained unsecured, and the flow of blood through them remained. Whether the ligature of the solitary vessel had the desired effect, or whether it was simply a case of *post hoc ergo propter hoc*, it is impossible to say. The proposal to examine the parts was made by me at the time of consultation, allowing some interval after the bleeding to elapse; but the opinion was against me, and I did not feel justified in taking the responsibility of acting. It could not have been done without putting the patient under ether, and there was danger that his struggles would have brought on fatal hemorrhage. As the *post-mortem* examination showed, no further operation would have been successful."—*Brit. Med. Journ.*, Oct. 14, 1882.

#### *Syme's Amputation.*

Every one knows that Mr. Syme attached very great importance to certain details of the admirable operation of amputation at the ankle-joint that goes by his name. He insisted especially upon the position of the incision across the sole. "The foot being placed at a right angle to the leg, a line drawn from the centre of one malleolus to that of the other, directly across the sole of the foot, will show the proper extent of the posterior flap. The knife should be entered close up to the fibular malleolus, and carried to a point on the same level of the opposite side, which will be a little below the tibial malleolus." Thus he laid it down, and he dissected the flap off the os calcis from below upward. These directions were for a long while rigidly observed, but of late years surgeons have been less particular in the direction of the incisions. That across the sole is often made obliquely backward, at the expense of the flap. The incision across the front of the joint is also varied, sometimes being quite transverse, at others curved towards the toes. With regard to the heel, of course the more obliquely backward the incision of the sole is made the less difficulty will there be in the reflection of the flap, if done from below upward; but it seems of importance to preserve at least the whole of the heel, so that it is best to make the incision a vertical one. The thick integument of this region forms so capital a pad on the extremity of the stump that care should be taken to secure the whole of this, and to bring it well forward in the first instance, for during repair and afterward there is a tendency in this to be drawn backward. Of course it will not be forgotten that after this operation the person stands and walks directly upon the extremity of the stump. With regard to the particular points where the extremities of the vertical incision should be, some surgeons keep them both on a level with the external malleolus, but Mr. WM. S. SAVORY prefers to have them rather more forward—that is to say, on a line with the extremity of the internal malleolus, but not extending higher than the level of the external one, for the base of the flap is thereby so much broader. This is, he thinks an advantage, and there is no objection to it. But of all changes in the operation he should attach most importance to the way in which the dissection is done. He greatly prefers, after making both incisions, to open the joint from the front, and then to work from above downward. This mode of dissecting out the os calcis is far easier than the original plan of dissecting from below upward, and there is less danger of inadvertently cutting into the substance of the flap. He has adopted this plan now for several years in many cases, and he cannot doubt that

it is a much better one of performing the operation. By dissecting out the os calcis from above downward, and so escaping the only difficulty in the operation—that of turning off the heel—there is no temptation, as in the other way, by carrying the first incision obliquely backward, to sacrifice some portion of the flap.—*Lancet*, Feb. 3, 1883.

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*Resection of Several Ribs in Empyema.*

Dr. BRUGLOCHER (*Aerzt. Intell.*, No. 31, 1882) contributes a paper on this subject, advocating the practice of resection of several ribs in cases of long-standing empyema in adult patients. He regards the excision of a small piece of rib. as accessory to the ordinary method of opening the pleural cavity, as accepted by the profession at the present time; the proceeding being a matter of indifference to the patient, but of decided value in its results. The ultimate results of operation for relief of empyema are found to be uniformly more satisfactory in children than in adults. The explanation of this fact he finds in the greater elasticity of the chest-walls, which adapt themselves to the diminished size of the compressed lung, and thus assist in lessening the size of the pleural cavity. This retraction of the chest-walls can only take place to a very limited extent in the more rigid adult thorax, and hence the recovery is prevented by a purely mechanical agency, which admits of removal by mechanical means. Resection of ribs has generally been undertaken only as a means of facilitating the continued escape of pus from a suppurating pleura; here, however, one has to do with a plastic operation, the result of which depends, amongst other things, upon the mechanical exactness with which it is carried out. Several authors have practised and recommended this method, which was first suggested by Simon. As the result of an investigation into the work of several authors, Dr. Homen, of Helsingfors, lays down the rule that, in cases where two to three months have passed between the commencement of the disease and the formation of a fistula, and where recovery has not taken place in from four to five months afterwards, no hope can be entertained of recovery by ordinary means. The details of a case are related in which a simple serous pleurisy in a man, aged 45, was treated at first by puncture, with apparent success. Six months later, a painless swelling became developed in the right side in the axillary line, dulness and absence of respiratory sounds being noted, extending as far upwards as the middle of the shoulder-blade. Its contents being found to be purulent, the tumour was incised, three months after its first appearance, and a portion of the eighth rib, about one inch, removed. The whole operation and subsequent treatment of the wound were carried out strictly antiseptically, and the discharge from the opening was but very slight, but recovery did not take place. Ten weeks after the operation it was found that a cavity still remained, allowing a probe to pass three inches from without inwards, and four and a quarter inches upwards. Free resection of the fourth, fifth, sixth, seventh, and eighth ribs was then performed, three and three-quarter inches being removed from the lowest, and one and three-quarter inches from the highest of these, and from the intermediate ribs gradually increasing lengths. The pleura was not opened in any fresh place. By various methods of calculation, Dr. Bruglocher arrives at the conclusion that the length of rib to be removed must about correspond with the distance between the pulmonary and parietal pleura, and the resection must be carried upwards in gradually decreasing extent to the point where the two surfaces of pleura are again in contact. The results obtained in this case were satisfactory; the falling-in of the chest-wall was ultimately followed by complete healing of the sinus.—*London Med. Record*, Dec. 15, 1882.

*Resection of the Ankle.*

Prof. BUSCH, of Berlin, describes in the *Centralblatt für Chirurgie*, No. 41, 1882, a new method of resecting or simply of exposing and clearing out the ankle, in cases of fungous inflammation of this joint. The ordinary operation by two lateral incisions does not, it is held, expose the interior of the joint to such an extent as to enable the surgeon to determine the amount of disease. Hueter, who recognized this difficulty, exposed the joint by forming a flap on its anterior surface. This proceeding has not been received with much favour, as it necessitates division, not only of several important tendons, but likewise of vessels and nerves. If the flap be formed from the posterior surface of the joint, the tendo Achillis must be divided, and the strength of this structure, even though it be united again by sutures, will necessarily be much impaired. On September 5, the following operation was performed by Dr. V. Hüsslin, under the direction of Prof. Busch. An incision was carried from malleolus to malleolus across the sole of the foot, inclining backwards towards the greater tuberosity of the os calcis. The soft parts of the sole were divided down to the bone. The tendinous and other soft structures behind the bones on each side of the joint were then carefully detached and drawn forwards, so that the lateral aspects of the joint were freely exposed. The os calcis was then sawn through in the direction of the external wound, from the anterior margin of the greater tuberosity, obliquely upwards towards the anterior margin of its articular surface with the astragalus. The posterior fragment having been elevated, the posterior ligamentous structures of the ankle were cut through, and the exterior of the joint freely exposed. In this case, as there was extensive disease of bone and synovial membrane, with much ulceration of cartilage, it was thought necessary, in addition to cutting away the fungous growths within the joint, to extirpate the astragalus, and to remove the softened and diseased portions of the bone at the extremities of the tibia and fibula, and on the upper surface of the os calcis. The interior of the wound having been disinfected, the posterior fragment of the os calcis was replaced and fixed by two wire sutures. The wound was drained and dressed antiseptically. Prof. Busch anticipates that if the patient—a young woman aged eighteen—remain free from tuberculosis, a movable and useful joint will be formed in this case between the bones of the leg and the upper surface of the os calcis, the limb of course being slightly shortened in consequence of the removal of the astragalus. There is no reason, it is thought, to doubt the future union of the fragment of os calcis; and the cicatrix across the sole, as it is situated in front of the greater tuberosity, is not likely to cause any trouble.—*London Medical Record*, Jan. 15, 1883.

## OPHTHALMOLOGY AND OTOTOLOGY.

*New Method for Dilating the Lachrymal Passages.*

Dr. GALEZOWSKI (*Recueil d'Ophthalmol.*, Aug. 1882) has for the last six or seven months been using forcible rapid dilatation of the nasal duct, without incision, for the cure of stricture. He has found that by the use of his dilator he can effect the cure of even long-standing strictures in a month or six weeks; and quotes cases in which after Stilling's method, followed by the use of Cooper's probes, had failed, his dilator was successful. His method is as follows: Having divided the canaliculus, as in Stilling's operation, he introduces his dilator, and

passes it, closed, down through the nasal duct. He then withdraws it slowly, pressing with his finger as he does so a lever which forces asunder the jaws of the dilator. The closed instrument is about the size of one of Bowman's No. 4 probes. When the jaws are separated it represents a probe of the size of Cooper's largest. This dilatation is made without the loss of a single drop of blood, and without, relatively, very much pain. The operation is usually followed by no inflammatory reaction, unless in cases where suppuration already exists, in which case he applies poultices, etc., for a day or so after. On the third or fourth day he is in the habit of introducing a small sound to assure himself that the nasal duct is quite free, and if so he either then, or the next day, introduces a large sound (No. 10 or 12 of his collection). This passes, usually, without the least difficulty and with little pain. He does not again pass a probe for five or six days. This is again repeated in another five or six days, and so on for three or four times, when the stricture is cured.—*Dublin Journ. of Med. Sci.*, Jan. 1883.

#### *Movements of the Eyes provoked by Pressure on a Diseased Ear.*

At the meeting of the Ophthalmological Society of the United Kingdom, Dr. HUGHLINGS JACKSON described a case which resembled one reported by Schwalbach, and was important as a demonstration that ear disease is one cause of, or one factor in, producing vertigo. It was a clinical illustration of one of Cyon's experiments on the semicircular canals of rabbits. The patient, a woman aged 49, had suffered from otorrhœa on the right side from childhood. She had recently become subject to attacks of auditory vertigo, and had a peculiar unsteady gait, resembling that produced by alcoholic intoxication. Pressing on the tragus of the right ear caused certain definite movements of both eyes; first, the eyes moved slowly to the left; then they moved back again, by jerks, to the right; at the same time she felt giddy, and there was apparent displacement of objects to the left. This displacement was synchronous with the slow movement to the left. The patient was examined by Mr. Laidlaw Purves and by Mr. Couper; and, under treatment, by syringing the ear, and the internal administration of quinine, she improved so that only the very slightest movements of the eyes were producible by the pressure spoken of. Dr. Jackson referred to researches by Dr. James, of Boston, U.S.A., which seemed to show that deaf mutes were not easily made giddy by rotatory movements, and were not at all liable to sea-sickness. He thought that the procedure mentioned in this case, might probably be helpful in the diagnosis of some difficult cases; and that the different results obtained at different periods in such cases would be some measure of the patient's progress. So far as it was possible to do so Dr. Jackson had satisfied himself that the apparent movement of objects was synchronous with the *slow* movements of the eyes, and was in the *same* direction as these latter.—*Ophthal. Review*, Feb. 1883.

## MIDWIFERY AND GYNÆCOLOGY.

### *The Peritoneal Uterine Suture in Cesarean Section.*

One of the main causes of the mortality after Cesarean section, and one which makes success almost a matter of luck, if we may use the word, rather than of surgical skill, is the gaping of the uterine wound, and consequent escape of uterine secretions into the peritoneal cavity. In some cases the uterus contracts well, and remains contracted; consequently the edges of the uterine wound remain in apposition, and unite, with or without sutures, and these patients usually do well. In others, uterine contraction is not permanent, but intermit-

tent; and in the relaxation of the uterus the sutures are often torn out, and the wound gapes, lochia escapes into the peritoneum, and septicæmia and peritonitis is the result. Consequently, obstetricians have long felt that the primary step needed to make Cæsarean section not more dangerous than other abdominal operations of equal magnitude, is the discovery of a method of suture which can be relied on to keep the edges of the uterine wound together. In a recent number of the *Archiv für Gynäkologie*, Dr. LEOPOLD, of Leipzig, describes a successful case of Cæsarean section in which he adopted a new method of suture. This method was, in principle, suggested to him by Säger—a paper by whom, “in defence of the classical Cæsarean section,” appears in the same number. Säger’s paper is largely devoted to criticizing the suggestions of Kehrer. The method of suture adopted by Leopold is based on the principle upon which ovariomists act, and at which Mr. Spence Wells arrived by those few experiments upon animals for which he has been so much abused in antivivisection pamphlets, and has so needlessly defended himself. That principle is the bringing together, in closing abdominal wounds, surfaces of peritoneum. To do this in closing the uterine wound, Dr. Leopold dissected up the peritoneum bounding the wound from the muscular tissue underneath to the extent of about one-fifth of an inch at the upper and lower angles, and rather more than one-third of an inch along the sides. Then he cut away the whole thickness of muscular tissue from which the peritoneum had been thus stripped. The freed peritoneum was then turned inwards so that it covered the edges of the wound, and was united with carbolized silk sutures, so that the surfaces of introverted peritoneum were brought into contact. The patient, as we have said, did well. One successful case of course proves little; but, as an attempt to solve a difficult problem, this seems to us worth notice.—*Med. Times and Gaz.*, Jan. 27, 1883.

#### *The Treatment of Placenta Prævia.*

A recent number of the *Zeitschrift für Geburtshilfe und Gynäkologie* contains an article of practical interest on the above subject by Dr. M. Hofmeier, of Berlin. It is based upon 46 cases which have been under his care. None of them were primiparæ. Of these, 3 were beyond the reach of treatment when first seen, one of these being dead when Dr. Hofmeier arrived, another dying three-quarters of an hour before delivery, and another two hours after delivery. Putting these aside, there remain 43. Of these, in 19 the implantation of the placenta was central, in 16 lateral, and in 8 marginal. The principle of treatment which Dr. Hofmeier regards as most essential is the termination of the labour as quickly as possible. The practice of temporizing by plugging until the dilatation of the cervix has proceeded far enough to admit of ordinary podalic version he regards as bad. When the case is seen early, the one step which is the more clearly indicated the earlier the case is seen, is bipolar version after the method of Braxton Hicks, one or two fingers only being passed through the os uteri, and then extraction of the child effected as gently as possible. By means of this operation the accoucheur can proceed to hasten delivery without much trouble to himself about the condition of the cervix. In 37 of Dr. Hofmeier’s cases this principle of treatment was acted on: in 19 of them the cervix being nearly or quite dilated; in 18 little or not at all. In 30 cases bipolar version was performed; in three it was only necessary to bring down a foot, as the pelvic extremity of the child presented; in 3 version was accomplished by the ordinary method of introducing the hand into the uterus; and in 1 case delivery was effected by forceps. In 5 cases in which the cervical canal was not dilated, and the placenta was implanted centrally, Dr. Hofmeier perforated the placenta and

drew down a foot through the hole. In two of these there was reason to think that the child was already dead, and in the other three profuse hemorrhage was going on. After delivery, ergotin was injected subcutaneously, and the uterus syringed with a 5 per cent. solution of carbolic acid. Our author combats the theoretical objections brought against the method of Hicks by some German writers, that it is difficult, and only suitable for immature children. He says—and we think accoucheurs who have followed the teaching of Dr. Hicks will agree with him—that it is easy, and suitable when the child is large as well as when it is small. Of the 37 cases treated by Dr. Hofmeier, in 17 he judged that the child had died before delivery. Of the remaining 20, 6 died in the process of birth, 3 of them being premature, and 3 as the result of perforation of the placenta. The gross infantile mortality therefore was 63 per cent. The average infantile mortality given by various writers who have collected cases is from 60 to 65 per cent. Of the 37 mothers only one died; a mortality of 2.7 per cent., which Dr. Hofmeier contrasts with the average mortality of 30 to 40 per cent. Of the 6 other cases treated upon a more expectant plan, 1 mother and 4 children died. Taking with these the 3 who did not come under care until too late for treatment, Dr. Hofmeier's figures show 5 deaths out of 46 cases, or a mortality of 10.8 per cent. While congratulating Dr. Hofmeier upon his low mortality, we yet think the figures are too small to show decidedly that it is due to more than good fortune. Dr. Barnes states in his work on Obstetric Operations that he had 29 consecutive cases without a death, and yet his total mortality was 1 in 11½. It appears to us that the dilatation of the cervix by India-rubber bags, as recommended by Dr. Barnes, and by the thigh and half-breech of the child, as practised by Dr. Hofmeier, have this in common: that they substitute soft, gentle pressure, uniformly applied to a large extent of the cervix, for the violent pressure of the operator's knuckles against a few points of the cervix, which is an inseparable part of the *accouchement forcé*, i. e., the violent forcing of the hand through the undilated cervix for the purpose of effecting podalic version. We are inclined to think their good results largely due to this improvement.—*Med. Times and Gaz.*, Feb. 24, 1883.

#### *Radical Cure of Prolapsus Uteri.*

Dr. CANEVA, of the Ospitale Maggiore at Milan, comments, in the *Gazetta degli Ospitali* of December 20, 1882, on the unsatisfactory results of mechanical supports, and of vaginal plastic operations, in the treatment of complete uterine prolapsus. He recommends an alternative operation, with the object of suspending the womb from above, by promoting adhesions between its body and the parietal peritoneum in the hypogastric region. The patient is to be kept in bed for some days before the operation, to maintain the uterus reduced. The bowel having been cleared by injection the previous evening, and the bladder emptied just before anaesthetization, whilst the patient is lying on her back, the operator introduces a metallic sound, and entrusts it to a competent assistant, with instructions to maintain the anterior surface of the uterus in contact with the abdominal wall. Commencing at a point two inches from the pubis, an incision is to be made three inches upwards along the linea alba down to the peritoneum over the body of the womb, which can be felt by the finger with increasing distinctness as the division of successive layers proceeds. So soon as the peritoneum is reached, the most delicate stage of the operation is entered upon. The wound is to be enlarged transversely, and an area of peritoneum at least an inch and a half in diameter exposed, by drawing aside the margins of the wound and detaching the serous membrane with the handle of the bistoury or with the finger:

The assistant holding the womb fixed with the sound against the exposed peritoneum, the operator, with a fine needle threaded with catgut, sutures the parietal peritoneum to the corresponding serous investment of the womb. The sound is not to be withdrawn until the surgeon has satisfied himself that the proceeding has resulted in the effectual suspension of the uterus to the abdominal wall. In closing the wound, two or three of the stitches are to include the peritoneum. The whole procedure is to be conducted with strict antiseptic precautions and Listerian dressings. Dr. Canova has not given any clinical results, but promises a further contribution.—*Lancet*, Jan. 6, 1883.

### *The Etiology of Fibrinous Polypus of the Uterus.*

In a recent number of the *Zeitschrift für Geburtshülfe und Gynäkologie*, Dr. LUDWIG JOSEPH, of Landeck, relates a case of fibrinous polypus of the uterus, quite exceptional in its origin, and of much interest for several reasons. A fibrinous polypus, as our readers are aware, is essentially a blood-clot, which has adhered to some part of the uterine wall, has consequently been retained in utero, and has undergone the changes which blood-clots in the living body usually do undergo—decolorization, shrinking, and hardening. The typical history of these cases is that a young woman goes from six to twelve weeks without menstruating, and then begins to lose blood copiously. When the uterus is thoroughly examined, a fibrinous polypus is found, removed, and the hemorrhage ceases. Kiwisch, because he found no trace of foetal membranes in polypi of this kind, taught that they occur quite independently of pregnancy. This view was controverted by Seanzoni and C. Braun, who believed that they always occurred as a sequel of abortion or labour. One case has been described by Rokitansky in which post-mortem examination showed a body like a fibrinous polypus, except that it was not adherent, in a uterus which presented no sign of pregnancy. Dr. Joseph's patient was a widow aged fifty-five, who had ceased to menstruate at the age of forty. For nine months before coming to him she had suffered from uterine hemorrhage. The uterus was retroverted and flexed, enlarged, and fixed. Under palliative treatment the hemorrhage was reduced, and four weeks after treatment (by rest and mineral acids) a retort-shaped solid mass was passed from the uterus. It measured about three inches and a quarter long by one inch and a half in thickness, and consisted of laminated, partly decolourized fibrin, embedded in which was a very vascular myomatous tumour, the size of a hazelnut. Dr. Joseph's theory of the case is, that the myoma caused hemorrhage: that the flexion offered an almost insurmountable obstacle to the outflow of blood, which was therefore retained, and underwent the usual changes. He does not explain how it was that the flexion, which would not allow fluid blood to pass, yet allowed this solid mass to escape. The interest of the case is in the fact that it shows that the fibrinous uterine polypus is not invariably connected with a previous pregnancy.—*Med. Times and Gaz.*, Feb. 10, 1883.

### *Martin's Operation.*

A case of this operation is published by Dr. MÖRNICKE in a recent number of the *Zeitschrift für Geburtshülfe und Gynäkologie*. The case came under the care of Dr. Mörnicke while he was in charge of Professor Schroeder's wards, during a recent illness of that distinguished gynecologist. The patient was aged thirty-five, suffered from pain and hemorrhage, and was very anæmic. The uterus was about the size of one four months pregnant. The cervical canal admitted the finger, and thus a broad-based tumour could be felt springing from



the anterior wall of the cavity. Beside this, a fixed tumour, as big as a good-sized apple, and closely connected with the cervix, could be felt behind the uterus in the hollow of the sacrum. The patient was perseveringly treated with ergotin, and then by scraping the uterine mucous membrane with a sharp spoon, without any persisting benefit. "Martin's operation" was then performed antiseptically. The abdomen was opened, the uterus was made to protrude through the wound, and its anterior wall incised till the tumour was got at. This was then shelled out of its bed, and removed. A thick drainage-tube was inserted into the uterus, and made to emerge through the vagina. The uterine wound was sewn up with numerous closely set sutures, and the abdomen closed in the usual way. The operation lasted three-quarters of an hour, and the amount of blood lost was very slight. The operation was followed by remittent pyrexia; and on the tenth day an inflammatory exudation was perceptible in the left lower belly. The drainage-tube was removed on the nineteenth day, as secretion then ceased to flow from it. On the forty-sixth day a quantity of fetid pus was discharged from the vagina. The pyrexia after this abated, and the patient left her bed on the seventy-sixth day after operation. The temperature again rose, however, the patient wasted, and died 111 days after the operation. The autopsy showed peritonitis with sero-fibrinous exudation; a collection of pus in each broad ligament; almost complete involution of the uterus; the endometrium healthy. The cervical tumour was a myoma. Dr. Mörke thinks Martin's operation is strongly to be recommended, in the strictest sense "an ideal operation."—*Med. Times and Gaz.*, Jan. 13, 1883.

#### *Total Extirpation of the Uterus through the Vagina.*

At the recent Congress of Physicians in Eisenach, OLSHAUSEN reported that he had performed total extirpation of the uterus 23 times. Of these, 3 operations were not completed; one on account of rectal and two on account of vesical adhesions; one case has a vesico-vaginal fistula as a sequel, and another an intestino-vaginal fistula. Of the remaining twenty cases, 6 died. In nineteen cases there was carcinoma of the cervix; in three, sarcoma of the body of the uterus; in one case the operation was performed on account of myoma of the posterior wall of the cervix. Of the survivors of the operation, in three the disease reappeared, and of these, two died.

In the last 10 cases, he had employed the elastic ligature exclusively, with carbolic acid irrigation, drainage tube in Douglas's pouch, and iodoform gauze. In the discussion which followed, MARTIN reported that he had made 31 operations, in 5 of which, all the diseased tissue could not be removed; of the twenty-six others, 4 died. He commenced with opening the posterior arch of the vagina and then ligatured the tissues that were to be divided, so avoiding all loss of blood; he always employs drainage. His results were not successful as regards return of the disease, as of all these cases only one remained one year and a half free from the disease.

KEYELMANN stated that he had never seen a case of operation for carcinoma in which a permanent cure was obtained; he thought therefore the operation should be reserved for cases of adenoma.

Olshausen, Veit, Rinecker, and Martin were opposed to the view, as they have all seen cases in which long-continued or permanent relief has been maintained.—*Contrib. f. Chirg.*, Jan. 20, 1883.

*Double Ovariectomy and Resection of Portions of Bladder and Ileum for Carcinoma.*

SCHUSTLER has recently recorded (*Wiener Med. Woch.*, Nos. 2 and 3) an extraordinary case of operation by Billroth. The patient, a woman aged twenty-nine, married at the age of eighteen, and had five children without any trouble; but the sixth pregnancy ended, four years ago, in the expulsion of a decomposing fœtus of about six months, since which time leucorrhœa was constantly present. Nineteen months ago the patient was delivered of a healthy child. But the first signs of illness dated from the miscarriage, and were pain increasing in severity, fever, and tenderness on pressure about the lower part of the abdomen; later on, shortness of breath and palpitation were complained of, and to these were soon added disturbances of micturition and defecation. The chief point made out on admission, in October, 1881, was the detection of apparently two tumours in the abdomen, to some extent connected with one another. One was situated in the right iliac fossa, and was about the size of a man's fist. The second was separated from this by a furrow, and was the larger of the two, reaching from the right swelling into the left iliac fossa along Poupart's ligament, while upwards it nearly reached the false ribs. The tumours were but little movable, and admitted of but little motion one on the other. Both tumours were irregular on the surface, of dense consistence, and no fluctuation was detected. The diagnosis was: new growth in both ovaries, with ascites. The patient growing worse, an operation was performed for the removal of the tumours on October 18, 1881. Antiseptic treatment, without the spray, under deep narcosis, was adopted. A median incision was made at first from the navel to the pubic symphysis, but had to be extended for about an inch above the navel. Some loose adhesions were easily broken down, but this was not the case with others near the symphysis pubis, on account of which Billroth found it expedient to remove a piece of the bladder about an inch long, and not so wide. The urine had been previously drawn off, and only a few drops were seen in the viscus. An assistant seized the edges of the wound, and held them up, and so prevented the escape of urine into the peritoneal cavity. The bleeding was slight. Six silk sutures were used to sew up the bladder. But it was found necessary to resect also a portion of the small intestine, owing to the firm union which existed between the bowel and the tumour. Rather more than three inches of the length of the ileum were in this way removed. The corresponding mesentery was secured in five parts by double ligatures. The two cut ends were brought together first at the site of the insertion of the mesentery by five silk sutures after the manner of Wolfier, and the remainder of the lumen was then closed. With a little more trouble the enlarged left ovary was removed, Paquelin's cautery being used to divide the pedicle. The *right ovary* was afterwards got out without much difficulty. After the toilette of the peritoneum had been thoroughly carried out, the abdominal wound was closed by deep and superficial sutures; no drainage was employed. A firmly applied iodoform gauze dressing was used. The further course of the case was very favourable. The temperature never rose above 100° Fahr. For the first two days nothing but a little egg albumen was taken; on the third day a spoonful of milk and meat broth, with wine, were allowed. Flatus passed by the bowel after the second day; a natural stool followed the use of an enema on the tenth day. In the first days the urine was removed by a Nélaton's catheter; later on, micturition was spontaneous. The wound in the abdomen healed completely by first intention. All the sutures were removed by the tenth day. On November 12 the patient was quite well, having got up on the 10th. Fifteen months after the operation she

was in excellent health in every way. Menstruation returned three months after the operation, and continued to be regular, lasting from three to four days. The microscopical examination of the tumours showed them to be medullary carcinomata; both together weighed between four and five pounds. Schustler says that Madelung is the only other operator who has resected a portion of the intestines in such circumstances. The case is remarkable, seeing that double ovariotomy and resection of portions of the bladder and of the ileum were performed, and yet the patient recovered; further, no recurrence of the tumours had occurred after the lapse of fifteen months.—*Med. Times and Gaz.*, Feb. 24, 1883.

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## MEDICAL JURISPRUDENCE AND TOXICOLOGY.

### *Poisoning by Apomorphia.*

Dr. PÉCHOLIER, Professor in the Faculty of Medicine of Montpellier (*Annales d'Hygiène*, August 1882, p. 185), gives an account of his poisoning with this substance. Overworked and enfeebled physically by the milk diet which he had adopted for the preceding three months, Dr. Pécholier began to suffer from a very painful attack of rheumatic sore throat. During seven days he treated himself successively by salicylate of soda in doses somewhat larger than usual (6 grammes at first, and 4 grammes at each of two other doses), by injections of morphia, and by the application of leeches to the neck. Not finding relief, he had recourse to an injection of about 13 milligrammes ( $\frac{1}{2}$  grain) of apomorphia. At the end of two minutes he was seized with very severe nausea without vomiting; respiration ceased completely, but returned in an irregular fashion, and left a state of inexpressible anguish. The colleagues of the patient, who were brought in great haste, gave a second dose of apomorphia, which caused vomiting followed by fresh collapse, lasting from thirty to thirty-five minutes, during which time the respiration remained infrequent and stertorous, the pulse feeble and irregular, and the face livid. The application of sinapisms and a subcutaneous injection of sulphuric ether brought the patient out of this condition. In the evening there remained merely traces of the effect, and at the end of four days the angina itself had almost entirely disappeared. As to the cause of this unexpectedly energetic effect of the apomorphia, Dr. Pécholier thinks that the existing anemia and the other circumstances mentioned above are more to blame than the morphia or the salicylate of soda, although the latter was taken too freely. In his remarks he calls attention to the close connection between the centres for vomiting and respiration in the medulla as explaining very satisfactorily the action of apomorphia on the respiration. In conclusion, he recommends caution in the use of the drug and in the employment of the hypodermic method.—*Edinb. Med. Journ.*, Feb. 1883.

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